



**NED UNIVERSITY OF ENGINEERING & TECHNOLOGY
PROCUREMENT CELL**

Phone# 99261261– 68, (Ext. 2291) Fax # 99261255, E-mail: dp@neduet.edu.pk

“Say NO to Corruption”



Director Procurement

No. PC/NED/142085/7051/ **3911**

Dated: 25.05.2021

NOTICE INVITING TENDER

NEDUET invites Sealed Bids based on “Single Stage One Envelope” from the Manufacturers / Authorized Dealers / Distributors / Suppliers registered with Income Tax and GST Departments for following:

S#	Tender		Tender Schedule – Date and Time				Tender Fee
	Number	Work	Issue / Sale		Submission	Opening	
			From	To			
1.	PC(WI)/NED/ Equip/W.Q.Lab /03/7051/2021	Procurement of Laboratory Equipment for Water Institute at NEDUET	08.06.2021	22.06.2021	23.06.2021 10:00 A.M	23.06.2021 10:30 A.M	3000/-
Bid Security @ 2% of the total bid cost in shape of PO / Bank Guarantee /demand draft in favor of Director Finance							
Tender Documents can be purchased from ADP-II office against PO in favour of Director Finance & shall be opened as per above schedule in same office.							

Eligibility Criteria

- The bidder must have at least 3 years of experience in the relevant field
- Details of turn-over (Including in terms of Rupees) of at least last three years that average turnover of last three years should not be less than Rs. 200 million, per year as per online annual returns submitted to FBR.
- Registration with FBR / SRB (whichever is applicable) and must have valid professional Tax Certificate.
- Affidavit confirming that the firm has not been black listed by any Government, Semi Government or Autonomous Bodies on non-judicial stamp paper

Tender Fee and Bid Security in shape of Payorder should be in favor of Director Finance. Bidding documents can be obtained and shall be submitted in the office of ADP – II as per above schedule. Bidders are requested to give their Best and Final Price as “No Negotiations” is permitted. Bidding Documents containing detailed terms and conditions are available at Websites www.neduet.edu.pk and www.ppms.pprasinidh.gov.pk.

Director Procurement

(Signature)
25/5/2021

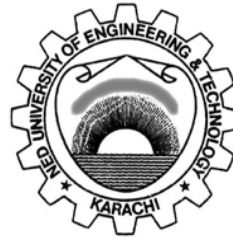
F/QSP 09/06/01

ISSUED ON: _____

ISSUED TO: _____

NED UNIVERSITY OF ENGINEERING AND
TECHNOLOGY, KARACHI

“Establishment of 21st Century Water Institute
at NED University”



TENDER DOCUMENT

PROCUREMENT OF LABORATORY EQUIPMENT
FOR WATER INSTITUTE

TENDER NO. : PC (WI)/NED/Equip/ W.Q. Lab/03/7051/2021

PROCUREMENT CELL

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Director Procurement

PART-II
INSTRUCTION TO BIDDERS

- i Source of Funds** Establishment of 21st Century Water Institute at NED University of Engineering & Technology, Karachi. The eligible payment under the contract is to be made from this approved project.
- ii Eligible Bidders**
- ii.a This Invitation for Bids is open to all suppliers from eligible source as defined in the SPP Rules (as amended) and its Bidding Documents except as provided hereinafter.
- ii.b Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Procuring agency to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the goods to be purchased under this Invitation for Bids.
- ii.c Government-owned enterprises in the Province of Sindh may participate only if they are legally and financially autonomous, if they operate under commercial law, and if they are not a dependent agency of the Government of Sindh.
- ii.d Bidders shall not be eligible to bid if they are under a declaration of ineligibility for corrupt and fraudulent practices issued by the any government organization.
- iii Eligible Goods and Services**
- iii.a The origin of all the goods & related services to be supplied under the Contract should be mentioned.
- iii.b Origin means the place where the goods are mint, grown or produce or the place from which the related services are supplied.
- iii.c The Origin of goods and services is distinct from the nationality of bidders.
- iv Cost of Bidding**
- iv.a The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Procuring agency named in the Bid Data Sheet, hereinafter referred to as “the Procuring agency,” will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

B. The Bidding Documents

v Content of Bidding Documents

v.a The bidding documents include:

- (a) Instructions to Bidders (ITB)
- (b) Bid Data Sheet
- (c) General Conditions of Contract (GCC)
- (d) Special Conditions of Contract (SCC)
- (e) Schedule of Requirements
- (f) Technical Specifications
- (g) Bid Form and Price Schedules
- (h) Bid Security Form
- (i) Contract Form
- (j) Performance Security Form
- (k) Manufacturer's Authorization Form

v.b The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or to submit a bid not substantially responsive to the bidding documents in every respect will be at the Bidder's risk and may result in the rejection of its bid.

vi Clarification of Bidding Documents

vi.a A interested Bidder requiring any clarification of the bidding documents may notify the Procuring agency in writing. The Procuring agency will respond in writing to any request for clarification of the bidding documents which it receives no later than three working days prior to the deadline for the submission of bids prescribed in the Bid Data Sheet. Written copies of the Procuring agency's response (including an explanation of the query but without identifying the source of inquiry) will be sent to all interested bidders that have received the bidding documents.

vii Amendment of Bidding Documents

vii.a At any time prior to the deadline for submission of bids, the Procuring agency, for any reason, whether at its own initiative or in response to a clarification requested by a interested Bidder, may modify the bidding documents by amendment.

vii.b All interested bidders that have received the bidding documents will be notified of the amendment in writing, and will be binding on them.

vii.c In order to allow interested bidders reasonable time in which to take the amendment into account in preparing their bids, the Procuring agency, at its discretion, may extend the deadline for the submission of bids.

C. Preparation of Bids

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| 1. Scope | 1.1 The NED University of Engg. & Tech., Karachi intends the “Procurement of Laboratory Equipment for Water Institute, NED University Main Campus” through National Competitive Bidding Single Stage one Envelope Procedure as per SPPRA Rules-2010 (Amended 2017). |
| 2. Language of Bid | 2.1 The bid prepared by the Bidder, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Procuring agency shall be written in the English language. |
| 3. Documents Comprising the Bid | 3.1 The bid prepared by the Bidder shall comprise the following components: <ul style="list-style-type: none"> a) Price Schedule completed in accordance with ITB Clauses 4, 5 and 6. b) bid security furnished in accordance with ITB Clause-9. |
| 4. Bid Prices | 4.1 The Bidder shall indicate on the appropriate Price Schedule the unit prices (where applicable) and total bid price of the goods it proposes to supply under the contract. Price should only be in PKR inclusive all government taxes and duties.

4.2 The prices shall be quoted on delivery to consignee’s end inclusive of all taxes, stamps, duties, levies, fees, insurances and installation and integration charges imposed till the delivery location specified in the schedule of Requirements. No separate payment shall be made of the incidental services.

4.3 Prices quoted by the by the Bidder shall be fixed during the Bidder’s performance of the contract and not subject to variation on any account, unless otherwise specified in the Bid Data Sheet.

4.4 Prices shall be quoted in Pak Rupees only. |
| 5. Bid Form | 5.1 The Bidder shall complete the Bid Form and the appropriate Price Schedule furnished in the bidding documents, indicating the goods to be supplied, a brief description of the goods, their country of origin, quantity, and prices. |
| 6. Bid Currencies | 6.1 Prices Shall be quoted in Pak Rupees Only. |
| 7. Bidder’s Eligibility | 7.1 As defined in Bid Data Sheet. |

- 8. Documents Establishing Goods' Eligibility and Conformity to Bidding Documents**
- 8.1 The documents evidence of conformity of the goods and services to the bidding documents may be in the form of literature, drawings, and Data, and shall consist of:
- (a) a detailed description of the essential technical and performance characteristics of the goods;
 - (b) the Bidder shall note that standards for workmanship, material ,and equipment, as well as references to brand names or catalogue numbers designated by the Procuring agency in its Technical Specification are intended to be descriptive only and not restrictive :till stated otherwise in Technical Specifications or Bid Data Sheet .The Bidder may substitute alternative standards, brand names , and /or catalogue numbers in its bid , provided that demonstrates to the Procuring agency's satisfaction that the substitutions ensure substantial equivalence to those designated in the in the Technical Specifications.
- 9. Bid Security**
- 9.1 The bid security of 2% of the total bid cost is required (in the amount specified in the bid data sheet) to protect the Procuring agency against the risk of Bidder's conduct, which would warrant the security's forfeiture The bid security shall be denominated in the currency of the bid:
- a) at the Bidder's option, be in the form of either demand draft/call deposit or an unconditional bank guarantee from a reputable Bank;
 - b) be submitted in its original form: copies will not be accepted;
 - c) remain valid for a period of at least 14 days beyond the original validity period of bids, or at least 14 days beyond any extended period of bid validity.
- 9.2 bid security shall released to the unsuccessful bidders once the contract has been signed with the successful bidder or the validity period has expired.
- 9.3 The successful Bidder's bid security shall be discharged upon the Bidder signing the contract, and furnishing the performance security.
- 9.4 The bid security may be forfeited:
- a) if a Bidder withdraws its bid during the period of bid validity or
 - b) in the case of a successful Bidder, if the bidder fails:
 - (i) to sign the contract in accordance or
 - (ii) to furnish performance security

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| <p>10. Period of Validity of Bids</p> | <p>10.1 Bids shall remain valid for the period specified in the Bid Data Sheet after the date of bid opening prescribed by the Procuring agency. A bid valid for a shorter period shall be rejected by the Procuring agency as non responsive.</p> <p>10.2 In exceptional circumstances, the Procuring agency may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. The bid security shall also be suitable extended. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request will not be required not be required nor per mitted to modify its bid.</p> |
| <p>11. Format and Signing of Bid</p> | <p>11.1 The Bidder shall prepare an original copy of the bid indicated in the Bid Data Sheet, clearly marking each "ORIGINAL BID" as appropriate.</p> <p>11.2 The original bid shall be shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the contract.</p> <p>11.3 Any interlineations, erasures, or overwriting shall be valid only if they are initialed by the person or persons signing the bid.</p> |

D. Submission of Bids

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| <p>12. Sealing and Marking of Bids</p> | <p>12.1 The Bidder shall seal the original bid in separate envelopes, duly marking the envelopes as "ORIGINAL BID". The envelope shall then be sealed in an outer envelope. The inner and outer envelopes shall be addressed to the Procuring agency at the address given in the BDS, and carry statement <u>"DO NOT OPEN BEFORE</u>
 <div style="text-align: center; margin-top: 5px;"> <u>at</u> <u>A.M"</u> </div> </p> <p>12.2 If the outer envelope is not sealed and marked as required, the Procuring agency shall assume no responsibility for the bid's misplacement or premature opening.</p> |
| <p>13. Deadline for Submission of Bids</p> | <p>13.1 Bids must be received by the Procuring agency at the address specified in Bid Data Sheet, not later than the time and date specified in Bid Data Sheet.</p> <p>13.2 The Procuring agency may, at its discretion, extend this deadline for the submission of bids by amending the bidding documents, in such case all rights and obligations of the Procuring agency and bidders previously subject to the deadline will thereafter be subject to the deadline.</p> |

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| 14. Late Bids | 14.1 Any bid received by the Procuring agency after the deadline for submission of bids prescribes by the Procuring agency shall be rejected and returned unopened to the Bidder. |
| 15. Modification and Withdrawal of Bids | <p>15.1 The Bidder may modify or withdraw its bid after the bid's submission, provided that written notice of the modification, including substitution or withdrawal of the bids, is received by the Procuring agency prior to the deadline prescribed for submission of bids.</p> <p>15.2 No bid may be modified after the deadline for submission of bids.</p> <p>15.3 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiry of the period of bid validity withdrawal of a bid during this interval may result in the Bidder's forfeiture of its bid security.</p> |

E. Opening and Evaluation of Bids

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| 16. Opening of Bids by the Procuring agency | <p>16.1 The Procuring agency shall open all bids in the presence of bidder's representatives who choose to attend, at the time, on the date, and at the place specified in the Bid Data Sheet. The bidders' representatives who are present shall sign a register/attendance sheet evidencing their attendance.</p> <p>16.2 The bidders' names, bid modifications or withdrawals, bid prices, discounts, and the presences or absence of requisite bid security and such other details as the Procuring agency, at its discretion, may consider appropriate, will be announced at the opening.</p> |
| 17. Clarification of Bids | 17.1 During evaluation of the bids, the Procuring agency may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing, and no change in the prices or substance of the bid shall be sought, offered, or permitted. |
| 18. Preliminary Examination | <p>18.1 The Procuring agency shall examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.</p> <p>18.2 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the correction of the errors, its bid will be rejected, and its bid security may be forfeited. If there is a discrepancy between words and figures, the amount in words will prevail.</p> |

- 18.3 Prior to the detailed evaluation, the Procuring agency will determine the substantially responsive bid is one which conforms to all the terms and conditions of the bidding documents without material deviations. Procuring agency's determination of a bid's responsiveness is to be based on the contents of the bid itself.
- 18.4 If a bid is not substantially responsive, it will be rejected by the Procuring agency and may not subsequently be made responsive by the Bidder by correction of the nonconformity.
- 19. Evaluation and Comparison of Bids**
- 19.1 The Procuring agency will evaluate and compare the bids which have been determined to be substantially responsive.
- 19.2 The Procuring agency's evaluation of a bid will be on delivery to consignee's end inclusive of all taxes, stamps, duties, levies, fees and installation and integration charges imposed till the delivery location and shall exclude any allowance for price adjustment during the period of execution of the contract.
- 20. Contacting the procuring agency**
- 20.1 No Bidder shall contact the procuring agency on any matter relating to its bid, from the time of bid opening to the time the announcement of Bid Evaluation Report. If the Bidder wishes to bring additional information to the notice of the procuring agency, it should do so in writing.
- 20.2 Any effort by a Bidder to influence the Procuring agency in its decision on bid evaluation, bid comparison, or contract award may result in the rejection of the Bidder's bid.

Award of contract

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| 21. Post – Qualification | <p>21.1 In the absence of prequalification, the procuring agency may determine to its satisfaction whether that selected Bidder having submitted the lowest evaluation responsive bid is qualified to perform the contract satisfactorily.</p> <p>21.2 The determination will take into account the Bidder’s financial, technical, and production capabilities. It will be based upon an examination of the documentary evidence of the Bidder’s qualifications submitted by the Bidder, pursuant to ITB Claus-7 as well as such other information as the Procuring agency deems necessary and appropriate.</p> <p>21.3 An affirmative determination will be a prerequisite for award of the contract to the Bidder. A negative determination will result in rejection of the Bidder’s bid, in which event the Procuring agency will proceed to the next lowest evaluated bid to perform satisfactorily.</p> |
| 22. Award Criteria | <p>22.1 The Procuring agency will award the contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined to be the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the contract satisfactorily.</p> |
| 22 a Procuring Agency’s right to vary quantities at the time of award | <p>The Procuring Agency reserves the right to increase/decrease the quantity of the required items and /or purchase part items already tendered either in full or in part. The Procuring Agency reserves the right to accept or reject any or all of the Tenders; divide business amongst more than one bidder.</p> |
| 23. Procuring agency’s Right to Accept any Bid and to Reject any or All Bids | <p>23.1 Subject to relevant provisions of SPP Rules 2010 (Amended 2017), the Procuring agency reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award.</p> <p>23.2 Pursuant to Rule 45 of SPP Rules 2010 (Amended 2017), Procuring agency shall hoist the evaluation report on Authority’s web site, and intimate to all the bidders seven days prior to notify the award of contract.</p> |

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| 24. | Notification of Award | <p>24.1 Prior to the expiration of the period of bid validity, the Procuring agency shall notify the successful Bidder in writing, that its bid has been accepted.</p> <p>24.2 Upon the successful Bidder's furnishing of the performance security pursuant to ITB Clause 26, the Procuring agency will promptly notify each unsuccessful Bidder and will discharge its bid security.</p> |
| 25. | Signing of Contract | <p>25.1 At the same time as the Procuring agency notifies the successful Bidder that its bid has been accepted, the Procuring agency will send the Bidder the Contract Form provided in the bidding documents, incorporating all agreements between the parties.</p> <p>25.2 Within fourteen (14) days, or any other period specified in BDS, of receipt of the Contract Form, the successful Bidder shall sign and date the contract and return it to the Procuring agency.</p> |
| 26. | Performance Security | <p>26.1 Within seven (07) days, or any other period specified in BDS, of the receipt of notification of award from the Procuring agency, the successful Bidder shall furnish the performance security in accordance with the Conditions of Contract, in the Performance Security Form provided in the bidding documents, or in another form acceptable to the Procuring agency.</p> <p>26.2 Failure of the successful Bidder to comply with the requirement of ITB Clause 25 or ITB Clause 26.1 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security, in which event the Procuring agency may make the award to the next lowest evaluated Bidder or call for new bids.</p> |
| 27. | Corrupt or Fraudulent Practices | <p>27.1 The Government of Sindh requires that Procuring agency's (including beneficiaries of donor agencies' loans), as well as Bidders/Suppliers/Contractors under Government-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the SPPRA, in accordance with the SPP Act, 2009 and Rules made there under:</p> <div style="margin-left: 40px;"> <p>(a) “Corrupt and Fraudulent Practices” means either one or any combination of the practices given below;</p> <p>(i) “Coercive Practice” means any impairing or harming, or threatening to impair or harm, directly or indirectly, any</p> </div> |

party or the property of the party to influence the actions of a party to achieve a wrongful gain or to cause a wrongful loss to another party;

(ii) **“Collusive Practice”** means any arrangement between two or more parties to the procurement process or contract execution, designed to achieve with or without the knowledge of the procuring agency to establish prices at artificial, noncompetitive levels for any wrongful gain;

(iii) **“Corrupt Practice”** means the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence the acts of another party for wrongful gain;

(iv) **“Fraudulent Practice”** means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

b) **“Obstructive Practice”** means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract or deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements before investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or acts intended to materially impede the exercise of inspection and audit rights provided for under the Rules.

Part-III

General Conditions of Contract

1. Definitions

1.1 In this Contract, the following terms shall be interpreted as indicated:

- (a) **“The Contract”** means the agreement entered into between the Procuring agency and the Supplier, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- (b) **“The Contract Price”** means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations.
- (c) **“The Goods”** means all of the equipment, machinery, and/or other materials, which the Supplier is required to supply to the Procuring agency under the Contract.
- (d) **“The Services”** means those services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training, and other such obligations of the Supplier covered under the Contract.
- (e) **“GCC”** mean the General Conditions of Contract contained in this section.
- (f) **“SCC”** means the Special Conditions of Contract.
- (g) **“The Procuring agency”** means the Sindh Public Procurement Regulatory Authority (SPPRA), Government of Sindh.
- (h) **“The Supplier”** means the individual or firm supplying the Goods and Services under this Contract.
- (i) **“SPP Rules 2010”** means the Sindh Public Procurement Rules 2010 (Amended 2017).
- (j) **“Day”** means calendar day.

2. Standards

The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standards appropriate to the Goods' country of origin. Such

standards shall be the latest issued by the concerned institution.

3. Patent Rights

The Supplier shall indemnify the Procuring agency against all third- party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof in the Islamic Republic of Pakistan.

4. Performance Security

- 4.1 Within seven (07) days, or any other duration as specified in SCC, of receipt of the notification of Contract award, the successful Bidder shall furnish to the Procuring agency the performance security in the amount specified in SCC.
- 4.2 The proceeds of the performance security shall be payable to the Procuring agency as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 4.3 The performance security shall be denominated in the Pak rupees and shall be an unconditional bank guarantee, pay order, call deposit as, provided in the bidding documents or another form acceptable to the Procuring agency;
- 4.4 The performance security will be discharged by the Procuring agency and returned to the Supplier not later than thirty (30) days following the date of completion of the Supplier's performance obligations under the Contract, including any warranty obligations, unless specified otherwise in SCC.

5 Inspections and Tests

- 5.1 The Procuring agency or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Procuring agency. The Procuring agency shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.
- 5.2 Should any inspected or tested Goods fail to conform to the Specifications, the Procuring agency may reject the Goods, and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Procuring agency.
- 5.4 The Procuring agency's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival shall in no way be limited or waived by reason of the Goods having previously been inspected, tested, and passed by the Manufacturer.
- 5.5 Nothing in GCC Clause 5 shall in any way release the Supplier from any warranty or other obligations under this Contract.

- 6. Packing** The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage.
- 7. Delivery and Documents** Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in the Schedule of Requirements. The details of shipping/ transportation and/or other documents to be furnished by the Supplier are specified in SCC.
- 8. Insurance** No need of Insurance for Local Supplies, However Supplier is responsible to deliver the goods in perfect condition to the end user.
- 9. Transportation** The Supplier is required under the Contract to transport the Goods to a specified place of destination and shall be arranged by the Supplier, and related costs shall be deemed to have been included in the Contract Price.
- 10. Incidental Services**
- 10.1 The Supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC:
- (a) performance or supervision of on-site assembly and/or start-up of the supplied Goods;
 - (b) furnishing of tools required for assembly and/or maintenance of the supplied Goods;
 - (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;
 - (d) performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- 11. Spare Parts**
- 11.1 The Supplier should provide any or all of the notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:
- (a) such spare parts as the Procuring agency may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
 - (b) in the event of termination of production of the spare parts:
 - (i) advance notification to the Procuring agency of the pending termination, in sufficient time to permit the Procuring agency to procure needed requirements; and

- (ii) following such termination, furnishing at no cost to the Procuring agency, the blueprints, drawings, and specifications of the spare parts, if requested.

12. Warranty

- 12.1 The Supplier warrants that the Goods supplied under the Contract are new, unused, of desired models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the Procuring agency's specifications) or from any act or omission of the Supplier, that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.
- 12.2 This warranty / maintenance period shall remain valid for six (06) months after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the Contract
- 12.3 If the Supplier, having been notified, fails to remedy the defect(s) within the period specified in SCC, within a reasonable period, the Procuring agency may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Procuring agency may have against the Supplier under the Contract.

13. Payment

- 13.1 The firm should submit stamp duty as per Government Rule before execution of work.
- 13.2 100% of the Contract Price shall be paid upon 100% delivery, and satisfactory Installation, integration, testing and familiarization training of the products at the Project site(s), subject to the production of installation and Operational Acceptance Certificates (inspection certificate) duly signed by authorized Inspection Committee of NEDUET.
- 13.3 Within 30 days after the issuance of inspection certificate and consignee's receipt certificate as mentioned in SSC clause 6.
- 13.4 If the supply is not according to the specifications or unsatisfactory, the Contract will be rejected and cancelled at the risk and cost of Firm
- 13.5 If the firm fails to execute the contract/supply order as per condition, action will be taken against them which may be their black listing and Earnest Money. / Security Deposit will be forfeited.
- 13.6 In case of late delivery @ 0.1% per day will be charged on bid amount deducted from the bill, but not more than 10% of contract value.

13.7 The currency of payment is Pak. Rupees.

- | | |
|---|--|
| 14. Prices | Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid, |
| 15. Contract Amendments | No variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties. |
| 16. Delays in the Supplier's Performance | <p>16.1 Delivery of the Goods and performance of Services shall be made by the Supplier in accordance with the time schedule prescribed by the Procuring agency in the Schedule of Requirements.</p> <p>16.2 If at any time during performance of the Contract, the Supplier or its subcontractor(s) should encounter conditions obstructing timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Procuring agency in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Procuring agency shall evaluate the situation and may at its discretion extend the Supplier's time for performance, with or without liquidated damages, in which case the extension shall be ratified by the parties by amendment of Contract.</p> <p>16.3 Except as provided under GCC Clause 19 a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 17 unless an extension of time is agreed upon pursuant to GCC Clause 16.2 without the application of liquidated damages.</p> |
| 17. Liquidated Damages | Subject to GCC Clause 19, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract or extended time, the Procuring agency shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in SCC of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in SCC. Once the maximum is reached, the Procuring agency may consider termination of the Contract pursuant to GCC Clause 18. |
| 18. Termination for Default | 18.1 The Procuring agency, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate this Contract in whole or in part: |

- (a) if the Supplier fails to deliver any or all of the Goods within the period(s) specified in the Contract, or within any extension thereof granted by the Procuring agency pursuant to GCC Clause 16; or
- (b) If the Supplier fails to perform any other obligation(s) under the Contract.
- (c) If the Supplier, in the judgment of the Procuring agency has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

18.2 In the event the Procuring agency terminates the Contract in whole or in part, pursuant to GCC Clause 18.1, the Procuring agency may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered, and supplier shall be liable to the Procuring agency for any excess costs for such similar Goods or services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

19. Force Majeure

19.1 Notwithstanding the provisions of GCC Clauses 16, 17 and 18, the Supplier shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

19.2 For purposes of this clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the Procuring agency in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

19.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Procuring agency in writing of such condition and the cause thereof. Unless otherwise directed by the Procuring agency in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

20. Termination for Insolvency

20.1 The Procuring agency may at any time terminate the Contract by giving written notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the procuring agency.

- 21. Termination for Convenience**
- 21.1 The Procuring agency, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Procuring agency's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.
- 21.2 The Goods that are compete and ready for shipment within thirty (30) days after the Supplier's receipt of notice of termination shall be accepted by the Procuring agency at the Contract terms and prices. For the remaining Goods, the Procuring agency may elect:
- (a) to have nay portion completed and delivered at the Contract terms and prices; and / or
 - (b) To cancel the remainder and pay to the Supplier and agreed amount for partially completed Goods and Services and for materials and parts previously procured by the Suppliers
- 22. Resolution of Disputes**
- Resolution of dispute shall be through Mechanism for Redressal of Grievances as provided in the rules or through Arbitration Act 1942.
- 23. Governing Language**
- The Contract shall be written in English language all correspondence and other documents pertaining to the Contract which are exchanged by the parties shall be written in the same language.
- 24. Applicable Law**
- The Contract shall be interpreted in accordance with the SPP Rules 2010 (amended 2017).
- 25. Taxes and Duties**
- Supplier shall be entirely responsible for all taxes, duties (including stamp duty), license fees, etc., incurred until delivery of the contracted Goods to the Procuring agency.
- 26. Overriding effect of Sindh Public Procurement Rules 2010 (Amended 2017)**
- In case of conflict or primacy of interpretation the provisions of SPP Rules 2010 (amended 2017) shall have an overriding effect notwithstanding anything to the contrary contained in these bidding documents

Part-IV

Bid Data Sheet

The following specific data for “**Procurement of Laboratory Equipment for Water Institute, NED University Main Campus**” to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB) Part One. Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

Introduction	
ITB 1	Name of Procuring Agency: Office of The Assistant Director Procurement – II, NED University, Karachi. Tel # 99261261-68, (Ext: 2291), Fax: 99261255
	Name of Contract. Procurement of Laboratory Equipment on F.O.R. Basis for Water Institute, NED University Main Campus
Bid Price and Currency	
ITB 4	Prices quoted by the Bidder shall be “ <i>fixed</i> ” and in” <i>Pak Rupees</i> ”
Preparation and Submission of Bids	
TB 7	<i>Selection / Eligibility / Responsiveness criteria:</i> <ol style="list-style-type: none"> 1 Bidder should be a Pakistani entity and Bid Price should only be in PKR. 2 Having local presence in Karachi. 3 Firm comply with specifications mentioned in bidding documents. 4 Bid should be accompanied with client list. 5 Bidder should strictly comply with technical specification. Bidders can submit the alternate proposal with required bid security. 6 The bidder must have at least 3 years of experience in the relevant field. 7 Income Tax Certificate (NTN) 8 GST / SRB Registration Certificate. (whichever is applicable) 9 Valid Professional Tax Certificate. 10 Details of turn-over (Including in terms of Rupees) of at least last three years and averagely should not be less than 200 Million in a year. 11 Copies of Annual Statement of Accounts of last three years along-with copies of last three years income tax returns submitted to FBR 12 The bidder must enclose manufacturer authorization certificate from the Principal (s).
ITB 9	Amount of bid security. 2% of Bid Value
ITB 10	Bid validity period. 90 days
ITB 11	Number of copies. One original
ITB 13	Deadline for bid submission. As notified in NIT
ITB 19.1	Bid Evaluation: Lowest evaluated responsive bid
	<i>Other:-</i> <ol style="list-style-type: none"> i. In case of any unforeseen situation or government holiday resulting in closure of office on the date of opening. Bid shall be submitted / opened on next working day at the given time ii. Tender documents can also be obtained by post against Pay Order/Bank Draft of Rs-800/- as courier charges in addition of tender fee iii. NEDUET may reject all or any bid subject to relevant provision of SPP Rules and may cancel the bidding process at any time prior to acceptance of bid or proposal as per Rule 25(1) of said rules. iv. Incomplete, conditional and tender without required earnest money in the specified form/format shall be rejected.

	<p>v. Bidders are advised that before filling the bidding documents all pages of bidding documents should carefully be rechecked. If any page(s) / paper(s) of bidding documents are missing that can be downloaded from the official website of this University and SPPRA, and also can be obtained from the office of the ADP-2 in Procurement Cell, NEDUET, Karachi. Bid(s) with incomplete bidding documents will straightaway be rejected.</p> <p>vi. All the clarification/ query must be addressed to Director Procurement in writing.</p> <p>vii. Bidders are strictly advised to submit their bids along-with all requisite documents together with valid email IDs</p> <p>viii. After issuance of Purchase Order, all correspondence shall be made by Project Director of NED University.</p>
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Part-V

Special Conditions of Contract

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. The corresponding clause number of the GCC is indicated in parentheses.

1. Definitions (GCC Clause 1)

GCC 1 (g)—The Procuring Agency is: Office of the Procurement Cell, NED University of Engineering & Technology, Karachi.

2. Performance Security (GCC Clause 4)

GCC 4—The amount of performance security, as a percentage of the Contract Price, shall be: 5%.

3. Inspections and Tests (GCC Clause 5)

Inspection of NEDUET shall inspect the procured good and ensure that it meets the tender specifications before its acceptance

4. Delivery and Documents (GCC Clause 7)

GCC 10—Supplier shall supply and install the good within ____ Days after signing the contract and shall submit the following.

- (i) Supplier's invoice showing Goods' description, quantity, unit price, and total amount;
- (ii) Packing List identifying the contents of Supply;
- (iii) Delivery note.
- (iv) Warranty and guarantee certificate;

5. Warranty (GCC Clause 12)

The equipment shall bear Standard warranty (with free parts & labor) from the date of installation / acceptance. Upon expiration of warranty, Purchaser at its option may enter into a Service Level Maintenance Agreement upon expiry of the warranty period in accordance with terms embodied in Appendix-A hereto

6. Payment (GCC Clause 13)

100% of the Contract Price shall be paid upon 100% delivery, and satisfactory Installation, integration and testing of the products at the Project site (s), subject to the production of installation and Operational Acceptance Certificates duly signed by authorized Inspection Committee of NEDUET

7. Liquidated Damages (GCC Clause 17)

If the Supplier fails to deliver the goods or perform the services within the time period(s) specified in the contract, the Purchaser shall, without prejudice to its other remedies under the contract deduct from the Contract Price, as liquidated damages, a sum equivalent to 0.1 percent of the Contract Price for each day of delay until actual delivery or performance, up to a maximum deduction of 10% of the Contract Price. Once the maximum is reached, the purchaser may consider termination of the contract.

8. Resolution of Disputes (GCC Clause 22)

In the case of a dispute between the Procuring agency and the Supplier, the dispute shall be referred to the dispute resolution mechanism as defined in rule 31, 32 and 34 of the (SPPR 2010) Amended 2017

9. Applicable Law (GCC Clause 24)

GCC 24 Contract shall be interpreted in accordance with the Sindh Public Procurement law of Sindh.

Part-VI
SCHEDULE OF REQUIREMENTS

The delivery schedule hereafter expressed the date of delivery required.

S. No	Items	Quantity	Time of Delivery from date of Award	Location of Supply
1.	Lab. Equipment	As specified in [Part –VIII] of this Bidding Documents	(06) Months	Water Institute NEDUET

Note: **specifications of above items are attached**

PART-VII
SAMPLE FORMS

Form-I

FORM OF TENDER
(Letter of Offer)

Tender Reference No.: _____ dated _____

Name of Contract: _____

The Director Procurement
NED University of Engineering and
Technology, Karachi

Dear Sir,

1. Having examined the Tender Documents including instructions to Tenderers, Conditions of Contract Specifications, Drawings, Schedule of prices and Addenda Nos. ----- for the execution of the above-name Contract, we the undersigned, being a company doing business under the name and address -----
and being duly incorporated under the laws of Pakistan hereby offer to execute and complete such Contract and remedy any defects therein in conformity with the said Documents including Address thereto for the total Tender price of Rs. ----- (in figures and words) or such other sum as may be ascertained in accordance with the and Documents.
2. We understand that all the schedules attached hereto form parts this Tender.
3. As security for due performance of the undertakings and obligations of this Tender, we submit herewith a Bid Bond referred in Clause 3 of the Instructions Tenderers and as per Annexure “D”, in the amount of Rs. _____ (in words and figures) drawn in favour of or payable to NED University of Engineering and Technology, Karachi, and valid for a period of 28 days beyond the period of validity of this Tender.
4. We undertake, if our Tender is accepted, to complete the whole of the work comprised in the above-named Contract within the time stated in Clause 12 of the Instructions to Tenderers.
- 5.
6. We agree to abide by this Tender for the period of 120 days beyond the date of opening of the Tender, and it shall remain binding upon us and may be accepted at any time before the expiration of this period.
- 7.
8. Unless and until a formal Contract Agreement is signed, this together with your acceptance thereof, shall constitute a binding contract between us.

9. We undertaking, if our Tender is accepted, to execute the Contract Performance Bond referred to in Clause 3 of the Instructions to Tenderers and as per Annexure "E" for the due performance of the Contract.
10. We understand that you are not bound accept the lowest or any Tender you may receive.
11. We do hereby declare that this Tender is made without any collusion, comparison of figures or arrangement with any other person making a Tender for the above-named Contract.
12. We confirm, if our Tender is accepted, that all partners of the joint venture shall be liable jointly and severally for the execution of the Contract and the composition or the constitution of the joint venture shall not be altered without the prior consent of the vice Chancellor, NED University of Engineering and Technology, Karachi, (Please delete this clause in case of tender from a single firm).

Dated this _____ day of _____ 2015

Signature _____ in the capacity of _____ duly authorized

to sign Tender for and on behalf of _____
(Name of Tenderer in Block Capitals)

Address: _____

Witness:

Name : _____

Address _____

Occupation: _____

Form-II

Price Schedule in Pak. Rupees

Name of Bidder _____. IFB Number _____. Page of ____

[illegible]

Total Bid amount in words: _____

Total Bid amount in figure: _____

Signature of Bidder _____

Note:

- (i) In case of discrepancy between unit price and total, the unit price shall prevail.
- (ii) The unit and total prices Delivered at NED University of Engg. & Tech., Karachi should include the price of incidental services. No separate payment shall be made for the incidental services.

Form-III

Experience of Similar Supply and Installation

[illegible]

Form-IV**Contract Form**

THIS AGREEMENT made the _____ day of _____ 2021_____ between *NED University of Engineering & Technology, Karachi*. (hereinafter called “the Procuring agency”) of the one part and *[name of Supplier]* of *[city and country of Supplier]* (hereinafter called “the Supplier”) of the other part:

WHEREAS the Procuring agency invited bids for certain goods and ancillary services, viz., Procurement of _____ for _____, NEDUET, Karachi. has accepted a bid by the Supplier for the supply of those goods and services in the sum of *[contract price in words and figures]* (hereinafter called “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
 - (a) the Bid Form and the Price Schedule submitted by the Bidder;
 - (b) the Schedule of Requirements;
 - (c) the Technical Specifications.
 - (d) the General Conditions of Contract;
 - (e) the Special Conditions of Contract; and
 - (f) the Procuring agency’s Notification of Award.
3. In consideration of the payments to be made by the Procuring agency to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Procuring agency to provide the goods and services and to remedy defects therein in conformity in all respects with the provisions of the Contract
4. The Procuring agency hereby covenants to pay the Supplier in consideration of the provision of the goods and services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written

Signed, sealed, delivered by _____ the _____ (for The Director Procurement the Procuring agency)

Signed, sealed, delivered by _____ the _____ (for the Supplier)

Form-V**CONTRACT PERFORMANCE BOND**

(Bank Guarantee)

Guarantee No. _____

Executed on _____

Expiry date _____

Letter by the Guarantor (Bank) to the Employer (University)

Name of Guarantor (Bank) with address: _____

Name of Principal (Tenderer) with address: _____

Penal sum of Security (Bond), (in figures and words): _____

Letter of Acceptance No. _____ Date _____

KNOW ALL MEN BY THESE PRESENT, that in pursuance of the Tender Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal (Contractor) we, the Guarantor above named, are held and firmly bound unto the Vice Chancellor, NED University of Engineering and Technology, Karachi, acting through the Director Procurement.

, NED University {hereinafter called the Employer (University) in the penal sum of amount stated above for the payment of which sum well and truly to be made to the said Employer (University), we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal (Contractor) has accepted the Employer's (University's) above said Letter of Acceptance for the supply, installation, putting into operation and demonstration of Equipment of laboratories of NED University Engineering and Technology, Karachi.

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertaking, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer (University), with or without notice to the Guarantor, which notice is hereby waived and shall also well and truly perform and fulfill and the undertaking, covenants, terms and conditions of the Contract and of any and all modification of the said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till the expiry of the guaranty period as per Clause 23 of the Conditions of Contract.

Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any under this Guarantee.

We, _____ (the Guarantor), waiving all objections and defenses under the Contract, do hereby irrevocably and independently guarantee to pay to the employer (University) without delay upon the Employer's (University) to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's (University's) written declaration that the Principal (Contractor) has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to the Employer's (University's) designated Bank and Account Number.

PROVIDED ALSO THAT the Employer (University) shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling the said obligations, and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer (University) forthwith and without any reference to the Principal (Contractor) or any other person.

IN WITNESS WHEREOF, the above bounden Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being, hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Guarantor (Bank)

Witness:

1. _____
(Signature)

(Signature)

Name, Title and Address (Seal)

(Name)

2. _____
(Signature)

(Title)

Name, Title and Address (Seal)

(Corporate Guarantor (Seal))

Form-VI**Manufacturer's Authorization Form**

To:

**NED University of Engineering & Technology,
Karachi.**

WHEREAS *[name of the Manufacturer]* who are established and reputable manufacturers of *[name and/or description of the goods]* having factories at *[address of factory]*

do hereby authorize *[name and address of Agent]* to submit a bid, and subsequently sign the Contract with you against NIT No. *[reference of the Invitation to Bid]* for the above goods manufactured by us.

We hereby extend our full guarantee and warranty as per Clause 12 of the General Conditions of Contract for the goods offered for supply by the above firm against this Invitation for Bids.

[signature for and on behalf of Manufacturer]

Note: This letter of authority should be on the letterhead of the Manufacturer and should be signed by a person competent and having the power of attorney to bind the Manufacturer. It should be included by the Bidder in its bid.

NED UNIVERSITY OF ENGINEERING AND TECHNOLOGY, KARACHI
DEPARTMENT OF CIVIL ENGINEERING
SPECIFICATIONS AND QUANTITIES OF EQUIPMENT

WATER QUALITY LABORATORY

BOQ Item	Item Code	Item	Description/Specification	Qty.	Unit Price	Total
1	WQL – 01	Aeration Unit	<p>Open tank of 28 l capacity. Stirrer with variable speed control (computer controlled). Agitators: They are the elements in charge of the agitation of the fluid, and they can be of different shapes and sizes: Two blades agitators, diameters: 100 mm and 50 mm. Two propeller agitators, diameters: 100 mm and 50 mm. Two turbine agitators, diameters: 100 mm and 50 mm. The propeller agitators are used for mixing with viscosity higher than 2000 cp. Air injection tube. Air injection control/Flow sensor. Air pump, computer controlled Three type of diffusers to sparge a gas: sparger tube, disk airstone and single airstone. Agitators holder: It is the element that allows to install different types of agitators. They are coupled with clamps. Oxygen sensor and oxygen probe (300 mm length). Temperature sensor to obtain the tank temperature. Together with the “TERA” recommended element, the temperature can be controlled too The Data Acquisition board is part of the SCADA system. PCI Express Data acquisition board to be placed in a computer slot. Bus PCI Express. Analog input: Number of channels= 16 single-ended or 8 differential. Resolution=16 bits, 1 in 65536. Sampling rate up to: 250 KS/s (kilo samples per second). Input range (V)=±10 V. Data transfers=DMA, interrupts, programmed I/O. DMA channels=6. Analog output: Number of channels=2. Resolution=16 bits, 1 in 65536. Maximum output rate up to: 900 KS/s. Output range(V)=±10 V. Data transfers=DMA, interrupts, programmed I/O. Digital Input/Output: Number of channels=24 inputs/outputs. D0 or DI Sample Clock frequency: 0 to 100 MHz. Timing: Number of Counter/timers=4. Resolution: Counter/timers: 32 bits</p>	1		

2	WQL – 02	Aerobic Digester, Chilled Water Circulating Unit	<p>20 l reactor vessel with a tubular membrane inside.</p> <p>Lid for the reactor with a manual valve and the respective holes.</p> <p>Heating or cooling coil.</p> <p>Thermostatic bath (up to 60° C), computer controlled (PID control):</p> <p>6 l capacity.</p> <p>Power: 600 W.</p> <p>Temperature sensor “J” type to obtain the temperature in the thermostatic bath.</p> <p>Pump for hot water circulation of the thermostatic bath, computer controlled.</p> <p>Air compressor, range: 0 - 5 l/min, computer controlled.</p> <p>Diffusion plate for the air inlet.</p> <p>Air flow meter, range: 0.4 - 5 l/min.</p> <p>Peristaltic pump, range: 0 - 0.05 l/min, computer controlled.</p> <p>Water flow meter, range: 0.004 - 0.05 l/min.</p> <p>Membrane, muds separation.</p> <p>Overflow for the outlet of filtered water.</p> <p>Valve on the bottom for mud extraction.</p> <p>To monitor the digestion:</p> <p>Temperature sensor.</p> <p>pH sensor.</p> <p>Dissolved oxygen sensor.</p> <p>The unit control elements are permanently computer controlled, without necessity of changes or connections during the whole process test procedure.</p> <p>Simultaneous visualization in the computer of all parameters involved in the process.</p> <p>Calibration of all sensors involved in the process.</p> <p>Real time curves representation about system responses.</p> <p>Storage of all the process data and results in a file.</p> <p>Graphic representation, in real time, of all the process/system responses.</p> <p>The Data Acquisition board is part of the SCADA system.</p> <p>PCI Express Data acquisition board to be placed in a computer slot. Bus PCI Express.</p> <p>Analog input:</p> <p>Number of channels= 16 single-ended or 8 differential. Resolution=16 bits, 1 in 65536.</p> <p>Sampling rate up to: 250 KS/s (kilo samples per second).</p> <p>Input range (V)=±10 V. Data transfers=DMA, interrupts, programmed I/O. DMA channels=6.</p> <p>Analog output:</p> <p>Number of channels=2. Resolution=16 bits, 1 in 65536.</p> <p>Maximum output rate up to: 900 KS/s.</p> <p>Output range(V)=±10 V. Data transfers=DMA, interrupts, programmed I/O.</p> <p>Digital Input/Output:</p> <p>Number of channels=24 inputs/outputs. D0 or DI Sample Clock frequency: 0 to 100 MHz.</p> <p>Timing: Number of Counter/timers=4.</p> <p>Resolution: Counter/timers: 32 bits</p>	1		
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3	WQL – 03	Drones for irrigation purpose	RTK featured, centi-meter-level accurate drone with multispectral and thermal imaging sensors, parallel usage or interchangeable lense separate for MS and Thermal imaging. Integrated spectral sun light detector Live RGB & NDVI view. Propeller based, Matrice 600 or equivalent with smart controller, 2 batteries and standard charger.	2		
4	WQL – 04	Ammonia electrodes and pH-mV meters + extra filling solution and electrode membrane	Nonvolatile memory holds up to 2000 data points with time date stamp Option of AC power or four AA batteries A large backlit, graphic LCD shows measurement with temperature along with electrode status, time/date, sample ID, user ID, and calibration data. Up to five-point automatic calibration with USA/NIST and DIN buffers, auto-buffer recognition, and recalibration feature to fix calibration errors. Kit should Include: High-performance ammonia I pH electrode ATC probe, Star stirring probe, 475-mL each of 1000 ppm standard, and storage solution, swing-arm electrode holder, and universal power adapter.	1		
5	WQL – 05	Anaerobic Digester	Two packed bed reactors (Anaerobic digesters) that may be operated in series or parallel flow arrangement: Capacity: 5 l. Heating jacket. Reactor packing: 25 mm diameter Bio Balls. Two feed computer controlled peristaltic pumps. Water circulation computer-controlled pump of the thermostatic bath. Computer controlled thermostatic bath up to 60 °C. PID Control. Two volumetric tanks to measure and store the volume of gas generated. Damping vessel, capacity: 1 l. Two water flow meter; range: 0 - 50 cm ³ /min. Five temperature sensors "J" type. Two pH sensors; range: 0 - 14. Shield and filtered signals to avoid external interferences. Real time PID control with flexibility of modifications from the computer keyboard of the PID parameters, at any moment during the process. Real time PID and on/off control for pumps, compressors, heating elements, control valves, etc. Real time PID control for parameters involved in the process simultaneously. Proportional control, integral control and derivative control, based on the real PID mathematical formula, by changing the values, at any time, of the three control constants (proportional, integral and derivative constants). DAB. Data Acquisition Board: The Data Acquisition board is part of the SCADA system. PCI Express Data acquisition board to be placed in a computer slot. Bus PCI Express. Analog input: Number of channels= 16 single-ended or 8	1		

			<p>differential. Resolution=16 bits, 1 in 65536.</p> <p>Sampling rate up to: 250 KS/s (kilo samples per second).</p> <p>Input range (V)=± 10 V. Data transfers=DMA, interrupts, programmed I/O. DMA channels=6.</p> <p>Analog output:</p> <p>Number of channels=2. Resolution=16 bits, 1 in 65536.</p> <p>Maximum output rate up to: 900 KS/s.</p> <p>Output range(V)=± 10 V. Data transfers=DMA, interrupts, programmed I/O.</p> <p>Digital Input/Output:</p> <p>Number of channels=24 inputs/outputs. D0 or DI Sample Clock frequency: 0 to 100 MHz.</p> <p>Timing: Number of Counter/timers=4.</p> <p>Resolution: Counter/timers: 32 bits.</p>			
6	WQL – 06	Ashing ovens (muffle furnaces) + shelf	<p>Controlled Ashing Furnace, which reaches 975°C with the standard stainless-steel manifold and 1093°C with the optional inconel manifold.</p> <p>Key Features:</p> <ul style="list-style-type: none"> Adjustable gas flowmeter/valve (0-80L/min.) on front for easy access when adjusting the airflow rate Stainless-steel manifold at rear chamber prewarms incoming gases, provides a maximum temperature gradient of only $\pm 3^\circ\text{C}$ at 750°C Chamber rear has a 0.95cm (0.38in.) port for monitoring chamber temperatures with independent measuring devices With 0.64cm (0.25in.) I.D. or 0.96cm (0.375in.) O.D. hose barb (in chamber rear) for inert gas line With two dual-purpose stainless-steel trays and handle to accommodate 24 (30mL) porcelain crucibles or 38 (10mL) quartz crucibles Meets ASTM™ D3174 specifications: 3 to 4 air exchanges per min. Heating rate of 8°C/min. to 500°C, 6°C/min. from 500° to 750°C Holds at 750°C for two hours, then turns off With Stainless-steel shelf With Stainless-steel flexible exhaust tubing kit with mounting hardware 	1		
7	WQL – 08	BET Surface Area Analyzer	<p>Total Surface Area: 0.1 to 50 m²</p> <p>Specific Surface Area: Approximately 0.01 – 2,000 m²/g Accuracy more than 10% for samples. allowing the use of samples less than 1g and as low as 0.1 square meters in the sample cell</p>	1		
8	WQL – 09	Block digesters	<p>Programmable digestions and large vial capacity, Perform digestions of aqueous samples for metals analysis by Atomic Absorption (AA) or Inductively Coupled Plasma (ICP), digesting large numbers of samples—up to 50 vials—simultaneously, Controlled heating rates, as low as 1°C per minute, protect against the bumping and splattering of reactive samples. Automated for large numbers of samples (8–40 tubes)</p> <p>Complies with ISO 9001, ISO 17025 and GLP, convenient lift function for automatic lifting of the insert racks</p>	1		

			Should feature data export, password-protected system with user management and logging of analyses, Transparent and illuminated components, Programmable temperature/time control along with fume scrubbers, numbered insert racks and Eco Kit			
9	WQL – 11	Desiccators	Nonvacuum desiccators in electronic models. Horizontal or vertical orientations Gasketed doors for an airtight seal, Transparent sides and top for easy identification of inner contents without opening up the door along with Electronic Auto-Desiccator Cabinets which features a permanent desiccant which automatically regenerates for worry-free storage or drying. The horizontal and vertical models are made of clear acrylic and have the desiccant located in the control unit; the desiccant is automatically regenerated by 30-minute cycle every five hours to lower humidity to 30 to 40%. Vertical cabinet also made from non-transparent, insulated ABS plastic and has an enclosed permanent desiccant; the electronic controller lowers relative humidity inside the cabinet to 20 to 30% in six hours (based on unloaded, continuous operation).	1		
10	WQL – 12	Dissolved Oxygen Meter (DO)	DO Meter with range up to 300%, altitude compensation up to 4000 m, Salinity compensation up to 40 g/L, Automatic temperature compensation, Automatic calibration in air, PC compatible via USB, Data logging and storage up to 8000 samples, GLP Features along with PC software and driver	1		
11	WQL – 13	Filterability Index Unit	Bench-top unit of Filterability Index Unit. Anodized aluminium frame and panels made of painted steel. metallic elements made of stainless steel. Feeding tank of 1 l capacity. Filtration unit, with porous bed filter, removable Height of the filter: 70 mm. Test filter cell diameter: 44 mm. The filter unit can be dismantled to change the sand. Regulation valve controls the flow, which is observed on a flow meter. Water flow meter, range: 0.07 - 0.55 l/min. Differential manometer of 500 mm, to measure the head loss. Corrosion-resistant materials are used. The elements and tubing connections of this unit must be transparent so that the operation can be observed and air bubbles avoided. Along with accessories included with the unit like Thermometer, with range from -10° C to 110° C, Stopwatch, 1 l graduated test tube, 0.6 l glass beaker to collect filtrate. Air pump for purging the manometer. Unit to be supplied with manuals, service, assembly and maintenance and operation guides and documentation.	1		
12	WQL – 14	Flocculation Test Unit	Bench-top Flocculation Unit. Main metallic elements made of stainless steel. Flocculation test unit illuminated in the base or back part, Six stirrers with stainless steel paddles, Agitation speed regulation: 25 – 250 rpm, Six flocculating graduated vessels, sample volume of each vessel: 1 l. Control panel: Timer, range: 0 – 60 min approx., Lamp switch, Rpm regulator and rpm display. Includes relevant instrumentation like pH sensor, Conductivity	1		

			<p>sensor with range: 0 – 1.99 mS. Temperature sensor, “J” type.</p> <p>Total dissolved solids sensor, range: 0 – 2000 ppm TDS.</p> <p>The complete unit should also include:</p> <p>Advanced Real-Time SCADA.</p> <p>Open Control + Multicontrol + Real-Time Control. Specialized Control Software for PC with perpetual license. Data Acquisition board (250 KS/s, kilo samples per second). Manual and PC based calibration exercises to demonstrate the user how to calibrate a sensor and the importance of checking the accuracy of the sensors before taking measurements. Unit should be</p> <p>Projector and/or electronic whiteboard compatible to allow the unit to be explained and demonstrated to an entire class at one time. Remote operation and control by the user and remote control for technical support included.</p> <p>Equipped with 4 safety systems (Mechanical, Electrical, Electronic & Software). Relevant PC Software to create, edit and carry out practical exercises, tests, exams, calculations, etc.</p> <p>Network Expandable System which enables multiple students to simultaneously operate many units in a network.</p> <p>Compatible PCI Express Data board for data acquisition, Analog input:</p> <p>Number of channels= 16 single-ended or 8 differentials. Resolution=16 bits, 1 in 65536.</p> <p>Sampling rate up to: 250 KS/s (kilo samples per second).</p> <p>Input range (V)=±10 V. Data transfers=DMA, interrupts, programmed I/O. DMA channels=6.</p> <p>Analog output:</p> <p>Number of channels=2. Resolution=16 bits, 1 in 65536.</p> <p>Maximum output rate up to: 900 KS/s.</p> <p>Output range(V)=±10 V. Data transfers=DMA, interrupts, programmed I/O.</p> <p>Digital Input/Output:</p> <p>Number of channels=24 inputs/outputs. D0 or DI Sample Clock frequency: 0 to 100 MHz.</p> <p>Timing: Number of Counter/timers=4.</p> <p>Resolution: Counter/timers: 32 bits</p> <p>Desktop Computer: Core i5 11th Generation, 8 GB DDR IV, 1TB hard disk, DVD RW, LCD 19”, Keyboard and Mouse), 4GB 128bit GDDR6 Video Graphics Cards, Printer (HP LaserJet pro duplex)</p>			
13	WQL – 15	Flow injection analyzer	<p>Flow injection analyser for analysis of cyanide, total cyanide, phenolics, total phosphorus, orthophosphate, total nitrogen, nitrate, nitrite, ammonia, urea, soluble sulfide, sulfur dioxide, carbon dioxide, fluoride, silicate, silica, anionic surfactant, boride, reducing sugar, total sugar, formaldehyde and Cr (VI). Walk away operation-including ability to run overnight. Automatic on-line distillation, UV digestion, extraction, heating, cooling and cadmium reduction. Rapid analysis and high sample through-put---run up to 18-150 tests per hour. Broad working range---sub-ppb to percent. Wide dynamic range---typically two to three decades. Automated standard preparation and dilution of over range samples (ratio 1.6-10000). Run up to</p>	1		

			8 channels for high productivity analysis or dedicated operation.			
14	WQL – 16	Freezing & Thawing, alternatively add preservatives (acids)	Freeze & thawing systems consisting of bags and containers for freeze and thaw processes of biopharmaceuticals in manufacturing and process development or in commercially available equipment such as laboratory freezers, walk-in freezers, cold rooms or temperature controlled cabinets.	1		
15	WQL – 18	ICP Mass Spectrophotometer	<p>Detection limits Based on three times the standard hopping at 1-point per mass. Element ng/L (ppt) ⁹Be < 0.5 ⁵⁹Co < 0.5 ¹¹⁵In < 0.25 ²³⁸U < 0.5</p> <p>Sensitivity Element M cps/mg/L ⁹Be > 6 ¹¹⁵In > 100 ²³⁸U > 80</p> <p>Oxide and doubly-charged species CeO+/Ce+ < 0.025 Ce++/Ce+ < 0.03</p> <p>Background signal Mass 220 < 1 cps</p> <p>Short-term precision < 3% RSD</p> <p>Long-term stability < 4% RSD over 4 hours</p> <p>Isotope-ratio precision Defined for the isotope ratio of ¹⁰⁷Ag/¹⁰⁹Ag. Obtained using single-point peak hopping. < 0.08*% RSD (*or within a factor of two of the counting statistics limit)</p> <p>Mass calibration stability Measured using a 1 µg/L multielement solution containing ⁷Li, ²⁴Mg, ¹¹⁵In and ²³⁸U. Defined in terms of the shift in spectral position corresponding to maximum spectral peak intensity for each element, obtained without the use of multiple-point, peak-searching algorithms. < 0.05 amu over 8 hours of continuous operation</p> <p>Quadrupole peak hop (slew) speed Defined as the maximum rate at which the quadrupole can jump over 160 amu without affecting the precision of the analytical measurement. 1.6 M amu/sec</p> <p>Quadrupole scan speed Defined as the maximum rate at which the quadrupole can be scanned while acquiring continuous spectral data at every from the minimum to</p>			

			<p>the maximum mass of the instrument (1-285 amu). 5000 amu/sec</p> <p>Abundance sensitivity Defined as the intensity of a given isotope at spectral peak maximum, relative to the intensity of that isotope at 1 amu lower and at 1 amu higher than the mass position corresponding to peak maximum. Measured at 238U: Better than 1.0×10^{-6} at low mass side of peak Better than 1.0×10^{-7} at high mass side of peak</p> <p>Detector linear range The SimulScan™ detection system operates from < 0.1 cps to $> 10^9$ cps. This provides over 10 orders of magnitude of linear dynamic range in a single continuous scan.</p> <p>Transient data acquisition speed > 3000 temporal data points/sec maximum Software for ICP-MS Polyscience Chiller-1HP 230V/50HZ TP Quiet ICP-MS Chiller Coolant Mix KIT-SOLUTION NEXION CELL NexION AFT Single-Element Solution 100 m AFT Multi-Element Solution 100 mL Blower and Vent Assembly High Vacuum Silicon Grease Able to analyze pertinent water quality parameters listed in SEQS, PSQCA</p> <p>Autosampler Autosamplers that are next generation of high-performance, robust, and agile autosamplers designed spectroscopy platforms - atomic and molecular. The autosamplers must be equipped with crash detection, programmable intelligent acceleration and deceleration speed in three axis, dual rinse station and LED status light. Designed with removable sample trays for easy switching between running aqueous and organic matrices. 60 Position Sample Racks CONICAL BOTTOM Fixed 2.0 mm Injector Quartz Torch Nickel Skimmer Cone Nickel Sampler Cone Hyper Skimmer Cone Sampler Cone Gasket Hyper Skimmer O-Ring Peripump Starter Tubing Kit Desktop Computer: Core i5 11th Generation, 8 GB DDR IV, 1TB hard disk, DVD RW, LCD 19", Keyboard and Mouse), 4GB 128bit GDDR6 Video Graphics Cards, Printer (HP LaserJet pro duplex) Required Gas - Argon / Nitrogen & Helium with regulator.</p> <p>Complete in all aspects including installation, commissioning with required necessary accessories and training</p>		
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16	WQL – 19	Ion Exchange Unit	Ion Exchange Unit having two transparent vertical columns for the anionic and cationic resins, volume: 0.16 l. One spare column. Four tanks made of PMMA (treated water, demineralized water, hydrochloric acid and sodium hydroxide). Diaphragm pump. Maximum flow: 5 l/h. Maximum height: 70 m. Hydrochloric acid resistant flow meter. Range: 0 - 10 l/h. Valves and pipes circuit. Conductivity meter (with conductivity cell): Scale: 0 - 10 mS. Operating temperature: 0 - 50 °C. Accuracy +/-2 %. Typical commercial anionic and cationic resins. Control board.			
17	WQL– 20	Libelium-e-Berry Smart Agriculture Solution Kit or equivalent IoT kit	Libelium-e-Berry Smart Agriculture Solution Kit or equivalent IoT kit External Temperature, Humidity and Pressure Probes, Soil moisture 1.5 m Probe, Soil moisture 4.5 m Probe, Leaf wetness probe, anemometer, wind vane and pluviometer probe. 1.5 m probe extender, Outdoor USB Cable, International adapter, External solar panel 7V - 500mA (power accessory) along with PC software and data transfer platform.	5		
18	WQL –21	Model Sedimentation Tank	Model Sedimentation tank of minimum volume 97L, Acrylic settling tank:1.05m x 0.35m x 0.2m, Feed tank capacity: 120L, Sediment flowmeter range: 0 – 2 L/min, Water flowmeter range: 0.5 – 5 L/min, slurry flow meter range is 0-2 L/min, Pump flow rate: 60 L/min @ 15m head, Metal framework with clear sedimentation tank. Flow sparge device in the tank to keep slurry in suspension. Operational manual with teaching exercises. 120L sump tank via a centrifugal pump. A flow sparge device in the sump tank to keep the slurry in suspension. Along with 1 X Burette mount, 3 X 1L Imhoff cones, 1 X Imhoff cones rack , 1 X 600ml sample vessel, 1 X 100ml sample vessel, 2 X stiffener bar, 1 X adjustable inlet weir, 1 X 1L bottle, blue dye with COSHH sheet, 25Kg precipitated Calcium Carbonate & safety data sheet, Operational manual with teaching exercises	1		
19	WQL – 22	Multimedia filters package unit	A pressure filter vessel which utilizes three or more different media as opposed to a "sand filter". Multimedia filters package unit / Deep Bed Filter Unit, computer controlled, Filtrate Flow Rate 50-2000 m3/day, Filtrate Recovery Rate 95-98%, Filtrate Particle Size <5 micron, Feed/filtrate water flow: 106.4, Backwash water flow : 1.5~3 x feed water flow. Filtration velocity (sand Media): 20 m/hr, Filtration velocity (DMI-65 Media): 10 m/hr	1		
	WQL – 23	Multipurpose Farm robot anti weed	Filtrate Turbidity <5 NTU, Front lifting device that can lift up to 750 kg. Lifting device at the rear can lift up to 1,500 kg. Device width 1.8 metres, 35 cm ground clearance. Perkins/FPT engine. Four steered wheels for maximum manoeuvrability. The machine should be able to mow, sow, plough or fertilize 24 hours a day. Includes ais user-friendly, safe and reliable software. Features autonomous working via software.	1		
20	WQL – 24	NVIDIA Tesla Workstation	NVIDIA Tesla Workstation, System memory 256 GB RDIMM DDR4, CPU Intel Xeon E5-	5		

			2698 v4 2.2 GHz 20 Core, 2+2TB SSD & 4 TB HDD water cooled system along with 4K 48+” LED, keyboard and mouse.			
21	WQL – 25	Orbital shaker	Orbital shaker, Platform size accepts loads up to 35 lbs. Operate in temperature ranges of 104°F (0° to 40°C), 20 to 80% non-condensing humidity, can be used with incubators, warm rooms, environmental chambers and refrigerators, Solid-state DC brushless motor with Variable speed control from 15 to 550 rpm. Continuous and timed operation from 0.1 hour up to 999 hours or 0.1 min to 999 min. Digital operating time display and controls. Should have option for user-adjustable speed calibration option	1		
22	WQL – 26	Particle size analyzer	Particle size analyzer for suspensions, emulsions, dry powders. Working on principle of Laser light scattering, Mie and Fraunhofer scattering. Data acquisition rate: 10kHz, Typical measurement time: <10 sec, Red light source: Max. 4mW He-Ne, 632.8nm, Blue light source Nominal: 10mW LED, 470nm, Effective focal length: 300mm, Angular range: 0.015 - 144 degrees, Size range: 10nm - 3.5mm, Number of size classes: 100, Accuracy: 0.6%	1		
23	WQL – 27	Permeability / Fluidisation Studies	Anodized aluminium frame and panels made of painted steel. Main metallic elements made of stainless steel. Unit to verify the Darcy's Law, to examine the Kozeny's equation and to observe liquid fluidisation behaviour of a granular bed. Permeameter: transparent acrylic cylinder of 50 mm diameter, 500 mm length. Two filter metallic disks. Four pressure taps located along the vertical axis of the cylinder. Tubes manometer of 500 mm length. Two manometers, Bourdon type, range: 0 – 1000 mm.c.a. Constant head supply device: max. height variation: 500 mm. Flowmeter, range: 0.2 – 2 l/min.	1		
24	WQL – 28	Portable pH meter	AC Adapter Universal 50-60 Hz, 100-240 VAC power adapter Accuracy (mV) ± 0.2 mV or $\pm 0.05\%$ of reading whichever is greater Accuracy (pH) ± 0.002 Alarm Output High/low limit alarm, calibration due alarm Backlight Option Yes, selectable Battery Life 800 hr. Battery Type 4 x AA Calibration pH with calibration editing option, relative mV (RmV), ORP and temperature Calibration Points 1 to 5 Certifications/Compliance CE, TUV 3-1, FCC Class A Data Points 5000 with date and time stamp Dimensions (L x W x H) 24cm x 10cm x 6.5cm (9.5 in. x 3.9 in. x 2.6 in.) pH meter, ROSS Ultra gel-filled epoxy-body pH/ATC electrode with 3m cable, pH	1		

			<p>4/7/10 buffer and rinse pouches, ROSS storage solution, protective meter armor, hard-sided carrying case, 4 AA batteries, computer cable</p> <p>Inputs BNC (pH or ORP electrode), pin-tip (reference electrode), 8 pin MiniDIN (ATC temperature probe)</p> <p>Isopotential Point 7.000 pH</p> <p>Keypad Comprehensive with menu-specific function keys and dual purpose scroll/shortcut keys</p> <p>Languages English available with software update</p> <p>Log Function Type Automatic data logging with Auto-Read and Timed measure modes; manual data logging with Continuous m</p> <p>Memory Non-volatile memory preserves data log, calibration log and meter settings</p> <p>Methods 10 per channel with password protection</p> <p>Model pH/mV/RmV/ORP/Temperature Portable Meter</p> <p>Power Supply Universal AC adapter (included) or 4 AA batteries</p> <p>Probe Type pH electrode, ORP electrode, reference half-cell electrode, ATC temperature probe</p> <p>Range (ORP) ± 2000.0 mV</p> <p>Range (Relative mV) ± 2000.0 mV</p> <p>Relative Humidity Range 5 to 85%, non-condensing</p> <p>Resolution (mV) 0.1mV</p> <p>Temperature Accuracy $\pm 0.1^{\circ}\text{C}$</p> <p>Temperature Operating 41°F to 113°F (ambient)</p> <p>Temperature Operating 5°C to 45°C (ambient)</p> <p>Temperature Probe Calibration 1 point temperature offset calibration</p> <p>Temperature Range (English) 22.0°F to 221.0°F</p> <p>Temperature Resolution 0.1°C, 0.1°F</p> <p>Temperature Selection</p> <p>Weight (Metric) 0.5 kg</p> <p>Display Type LCD Graphic, Backlit</p> <p>Measurement Modes pH, mV, relative mV (RmV) or ORP with temperature</p> <p>Outputs USB, RS-232</p> <p>Range (mV) ± 2000.0 mV</p> <p>Range (pH) -2 to 20</p> <p>Resolution (pH) 0.1/0.01/0.001</p> <p>Temperature Range (Metric) -5.0°C to $+105.0^{\circ}\text{C}$</p>			
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25	WQL – 29	Precision Hawk Crop Scouting Phantom Pro or equivalent drone package	Precision Hawk Crop Scouting Phantom Pro or equivalent drone package with smart controller and access to software, Weight: 2404 grams Payload: 998 grams Flight Time: 45 minutes Flight Range: 1.9 km 5-channel multispectral camera available	2		
26	WQL – 30	Pure Air Generator	Pure Air Generator. Use to replace conventional high-pressure cylinders to give years of uninterrupted supply of pure air at the touch of a button. Alarm display with help menu Outlet Flow Indicator Dew-Point Sensor Water vapour removal with peltier cooler to a dew point of -15 °C. Automatic periodically condensate removal. With integrated pre-filter for protection of the external compressor. With integrated dust filter in the in- and outlet for removal of solid particles. With integrated separator for condensate droplets with automatic discharge and pressure relief safety-valve. With 2 precision pressure regulators in the in- and outlet	1		
27	WQL – 31	Reverse Osmosis Plant Package unit	Main Unit Anodized aluminum frame and panels made of painted steel. Main metallic elements made of stainless steel. Diagram in the front panel with distribution of the elements similar to the real one. Rapid changeover from Reverse Osmosis to Ultrafiltration and back. All elements in contact with the process fluid constructed from hygienic design materials such as stainless steel, PTFE and silicone rubber. Stainless steel feed tank (15 l approx. capacity). Computer controlled three head positive displacement feed pump: Maximum flow: 38 l/min. Maximum design pressure: 150 bar; maximum operation pressure: 55 bar. This pump is used to feed product to the membrane module. Flow and pressure adjustable. Variable speed control. The pump has a relief valve to protect the unit. Frequency variator that controls the pump motor. Membrane module: Two tubular membranes connected in series. Membrane diameter: 12.5 mm. Membrane area: 0.000122 m ² . Tube volume: 75 ml. Maximum operation pressure: 55 bar.	1		

			<p>Two regulation valves to control the water flow and the effluent flow.</p> <p>Plates heat exchanger for the concentrate.</p> <p>Permeate stainless steel collecting tank (15 l approx. capacity).</p> <p>Instrumentation:</p> <p>Six temperature sensors, “J” type.</p> <p>Pressure sensor, range: 0 – 100 bar.</p> <p>Flow sensor (water inlet), range: 0.25 – 6.5 l/min.</p> <p>Level switch.</p> <p>Two membranes of each model of the following are supplied:</p> <p>RO01: Retention Character (99% NaCl), Process: Reverse Osmosis, max. pressure (45 bar).</p> <p>UF02: Retention Character (20,000 Da), Process: Ultrafiltration, max. pressure (10 bar).</p> <p>UF03: Retention Character (200,000 Da), Process: Ultrafiltration, max. pressure (15 bar).</p> <p>The complete unit should include:</p> <p>Advanced Real-Time SCADA.</p> <p>Open Control + Multicontrol + Real-Time Control.</p> <p>Specialized Control Software based on LabVIEW.</p> <p>Data Acquisition board (250 KS/s, kilo samples per second).</p> <p>Capable of doing applied research and real industrial simulation</p> <p>Remote operation and control by the user and remote control for technical support, are always included.</p> <p>ICAI software to create, edit and carry out practical exercises, tests, exams, calculations, etc.</p> <p>Scada-Net (ESN) System which enables multiple students to simultaneously operate many units in a network.</p> <p>Control Interface Box:</p> <p>Control Interface Box as part of the SCADA system.</p> <p>Control interface box with process diagram in the front panel.</p> <p>The unit control elements are permanently computer controlled.</p> <p>Simultaneous visualization in the computer of all parameters involved in the process.</p> <p>Data Acquisition Board:</p> <p>The Data Acquisition board as part of the SCADA system.</p> <p>Analog input: Channels= 16 single-ended or 8 differential. Resolution=16 bits, 1 in 65536. Sampling rate up to: 250 KS/s (kilo samples per second).</p> <p>Analog output: Channels=2. Resolution=16 bits, 1 in 65536.</p> <p>Digital Input/Output: Channels=24</p>		
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			<p>inputs/outputs. 4 ROUC/CCSOF. Computer Control +Data Acquisition+Data Management Software: The three softwares as part of the SCADA system. Compatible with the industry standards. Flexible, open and multicontrol software, developed with actual windows graphic systems, acting simultaneously on all process parameters. Management, processing, comparison and storage of data. Sampling velocity up to 250 KS/s (kilo samples per second). Manuals This unit must be supplied with all relevant manuals: Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals.</p> <p>Desktop Computer Core i5 11th Generation, 8 GB DDR IV, 1TB hard disk, DVD RW, LCD 19", Keyboard and Mouse), 4GB 128bit GDDR6 Video Graphics Cards, Printer (HP LaserJet pro duplex)</p>			
28	WQL – 32	Sedimentation Studies	<p>Five graduated, 1m long x 51mm bore glass cylinders mounted vertically on a backboard Cylinders are illuminated from behind and removable for cleaning Supply includes stop clock, three 2-litre plastic beakers and a specific gravity bottle Tube length: 1m Tube internal diameter: 51mm Number of tubes: 5 Electrical supply: supplied with a universal mains adapter suitable for 100-240V / 1ph / 50-60Hz Water: Initial fill of 1.5L per tube</p>	1		
29	WQL – 33	Sequential Batch Reactors (SBR) Package unit / Service Unit	<p>Service Unit: Anodized aluminum structure and panels of painted steel. Main metallic elements in stainless steel. Diagram in the front panel with similar distribution to the elements in the real unit. 2 Peristaltic dosing pumps, with variable speed, computer controlled. Flow rate up to 3 l./h. (unit standard disposition). With another disposition, they could reach a flow rate up to 10 l./h. Thermostatic bath, of 6 l. capacity, computer controlled. Temperature PID control of the thermostatic bath. Pump of 3 l./min., to impel the thermostatic water from the bath to the</p>	1		

			<p>reactor. Flow sensor, range: 0.25-6.5 l./min.</p> <p>2 Tanks for the reagents, of 1 l. capacity each one, made of Pyrex glass.</p> <p>The control of the reaction is carried out by a conductivity sensor, which allows the reaction evolution parameterization in real time.</p> <p>Three "J" type temperature sensors, one to know the thermostatic bath temperature in a continuous way and two sensors to know the water temperature of the thermostatic bath water inlet and outlet.</p> <p>Quick connectors with shutoff valve that enable an easy coupling of the Service Unit to the chosen reactor.</p> <p>All elements of this unit are chemically resistant.</p> <p>Dimensions and weight (approx.): 800 x 800 x 1000 mm. (31.49 x 31.49 x 39.37 inches.). 50 Kg. (110 pounds.).</p> <p>Control Interface Box</p> <p>The Control Interface Box as part of the SCADA system.</p> <p>Control interface box with process diagram in the front panel and with the same distribution that the different elements located in the unit, for an easy understanding by the student.</p> <p>All sensors, with their respective signals, are properly manipulated from -10V. to +10V. computer output.</p> <p>The unit control elements are permanently computer controlled, without necessity of changes or connections during the whole process test procedure.</p> <p>Simultaneous visualization in the computer of all parameters involved in the process.</p> <p>Calibration of all sensors involved in the process.</p> <p>Real time curves representation about system responses. Storage of all the process data and results in a file. Graphic representation, in real time, of all the process/system responses.</p> <p>Real time PID control with flexibility of modifications from the computer keyboard of the PID parameters, at any moment during the process.</p> <p>Open control allowing modifications, at any moment and in real time, of parameters involved in the process simultaneously.</p> <p>Data Acquisition Board</p> <p>This board is common for the Chemical Reactors. The Data Acquisition board is part of the SCADA system.</p> <p>PCI Express Data acquisition board to be placed in a computer slot. Bus PCI Express.</p> <p>Analog input:</p> <p>Number of channels= 16 single-ended or 8</p>			
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			<p>differential. Resolution=16 bits, 1 in 65536. Sampling rate up to: 250 KS/s (kilo samples per second). Input range (V)= ± 10 V. Data transfers=DMA, interrupts, programmed I/O. DMA channels=6.</p> <p>Analog output: Number of channels=2. Resolution=16 bits, 1 in 65536. Maximum output rate up to: 900 KS/s.</p> <p>Output range(V)= ± 10 V. Data transfers=DMA, interrupts, programmed I/O.</p> <p>Digital Input/Output: Number of channels=24 inputs/outputs. D0 or DI Sample Clock frequency: 0 to 100 MHz.</p> <p>Chemical Reactors</p> <p>Continuous Stirred Tank Reactor: Small scale Continuous Stirred Tank Reactor, computer controlled, Anodized aluminum structure and panel of painted steel. Main metallic elements in stainless steel. Diagram in the front panel with similar distribution to the elements in the real unit. Reactor body made of borosilicate glass, with a maximum capacity of 2 l., specially designed to work in continuous. It also allows batch operation. Adjustable volume from 0.4 to 1.5 l. Stainless steel heat transfer coil (5 loops of 60 mm of diameter) and a baffle (removable). Stirring system with speed control and indication, computer controlled. Stirrer range: 0-220 rpm. Reactor lip with connectors for the appropriate sensors. Temperature sensor "J" type to control the temperature into the reactor. Conductivity cell to control the reaction. Measurement range up to 20 mS. Quick connectors with shutoff valve that enable an easy coupling of the reactor to the Service Unit. All the elements of this unit are chemically resistant. Computer Control Software</p> <p>Batch Reactor</p> <p>Small scale Bath Reactor, computer controlled, Anodized aluminum structure and panel of painted steel, Main metallic elements in stainless steel, Diagram in the front panel with similar distribution to the elements in the real unit. The reactor body is an isolated vessel with a stainless-steel external casing. The working volume is 1 l. Heat transfer coil made of stainless steel and reactor baffle, of 5 loops of 60 mm of diameter. The tube internal diameter is of 6</p>			
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			<p>mm and the external one is of 8 mm.</p> <p>Stirring system with speed control and indication, computer controlled. Stirrer range: 0-220 rpm.</p> <p>Temperature sensor "J" type to control the temperature into the reactor.</p> <p>Conductivity cell to control the reaction. Measurement range up to 20 mS.</p> <p>Reactor lip with connectors for the appropriate sensors, Computer Control Software</p> <p>Tubular Flow Reactor</p> <p>Small scale reactor, computer controlled, Anodized aluminum structure and panel of painted steel, Main metallic elements in stainless steel, Diagram in the front panel with similar distribution to the elements in the real unit.</p> <p>Tubular flow reactor of volume 0.4 l. Coil shaped. Placed into an acrylic vessel through which the cooling or heating medium circulates. Coil length of 20 m.</p> <p>Electric pre-heater of 12 loops, and loop diameter of 70 mm approx., for the two reagents feed lines. It is placed before the mix and the currents inlet to the reactor.</p> <p>Temperature controlled by water jacketed.</p> <p>Two temperature sensors "J" type to know the reagents outlet temperature from the pre-heater.</p> <p>Conductivity cell to control the reaction. Measurement range up to 20 mS.</p> <p>Reactor lip with connectors for the appropriate sensors.</p> <p>Quick connectors with shutoff valve that enable an easy coupling of the reactor to the Service Unit, Computer Control Software.</p> <p>Stirred Tank Reactors in Series</p> <p>The stirred tank reactors in series, Anodized aluminum structures and panels of painted steel, Main metallic elements in stainless steel, Diagram in the front panel with similar distribution to the elements in the real unit. 3 Continuous stirred tank reactors connected in series, computer controlled.</p> <p>Reactors body made of pyrex glass with a volume of 2 l. Adjustable volume from 0.4 to 1.5 l. Each reactor is fitted with a conductivity cell. Measurement range up to 20 mS.</p> <p>Each reactor has a stirrer with variable speed, computer controlled.</p> <p>The two reagent vessels and the two variable speed dosing pumps. A dead-time residence coil can also be attached to the exit of the last reactor in the series.</p> <p>3 Temperature sensors "J" type, one in each reactor.</p> <p>Quick connectors with shutoff valve that</p>			
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			<p>enable an easy coupling of the reactors to the Service Unit. All the elements of this unit are chemically resistant. Computer Control Software.</p> <p>Plug Flow Reactor Small scale Plug Flow Reactor, computer controlled, designed to demonstrate the flow pattern characterisation and the steady state conversion in a tubular reactor with axial dispersion, Working volume: 1 L, Anodized aluminum structure and panels of painted steel, Main metallic elements in stainless steel, Diagram in the front panel with similar distribution to the elements in the real unit, Plug reactor constituted by a glass column of 1 l. and 1100 mm long, packed with 3 mm diameter glass balls, At the bottom of the column a premixer provides a complete mixing of the reagents entering the reactor and improves the flow distribution, Temperature sensor "J" type, Conductivity cell to control the reaction. Measurement range up to 20 mS, Quick connectors with shutoff valve that enable an easy coupling of the reactor to the Service Unit, All the elements of this unit are chemically resistant, Computer Control Software</p> <p>Desktop Computer Core i5 11th Generation, 8 GB DDR IV, 1TB hard disk, DVD RW, LCD 19", Keyboard and Mouse), 4GB 128bit GDDR6 Video Graphics Cards, Printer (HP LaserJet pro duplex)</p>			
30	WQL – 35	Temperature Chamber	<p>Temperature Chamber can realize both high and low temperature test. Temperature Chamber can realize both high and low temperature test. • -73°C to +175°C Temperature Range (opt. to +205°C)</p> <ul style="list-style-type: none"> • 7 Cu Ft Workspace, 24 W x 21 H x 24 D (198 Liters) • Programmable Temperature Controller • RS-232 Interface (Opt. GPIB and Ethernet) • High/Low Limit Control and Alarm • Viewing Window & Interior Light • 4" Access Ports on Left & Right Side • Non-CFC Cascade Refrigeration • standard parts warranty 	1		
31	WQL – 36	TOC Analyzer	<p>An ultra-wide measurement range 4 µg/L to 30,000 mg/L (with the automatic dilution function) utilizing 680°C Combustion Catalytic Oxidation/NDIR detection method.</p> <p>High-temperature catalytic oxidation technique specified in approved methods, including:</p> <ul style="list-style-type: none"> • EPA 415.3 • SM 5310B 	1		

			<ul style="list-style-type: none"> • ASTM D7573 <p>Automatic sample acidification and sparging, as well as an automatic dilution function that reduces sample salinity, acidity and alkalinity.</p> <p>TOC Control Software designed to simplify analysis work with an easy-to-understand display screen and a variety of functions, including:</p> <ul style="list-style-type: none"> • User-friendly display of the name, ID, and measurement results for selected samples, all in specific columns • List of files used by type that can be sorted by file name and date created • Ability to insert samples by dragging and dropping measurement conditions files • Simply drag the mouse over cells to batch-enter identical character strings, and sequential IDs and vial numbers <p>Autosampler</p> <ul style="list-style-type: none"> • 9 mL vials × 93 • 24 mL vials × 93 <p>Port Sampler</p> <ul style="list-style-type: none"> • Allow any vial size for up to 8 or 16 samples <p>Solid Sample Combustion Unit Analyte TC, IC, TOC (TC-IC) Method</p> <p>TC: Catalytically aided combustion oxidation at 900°C IC: Pre-acidification, oven temperature: 250°C Measuring range TC: 0.1 mg to 30 mg carbon IC: 0.1 mg to 20 mg carbon Sample Amount 1 gram - aqueous content < 0.5 g Repeatability S.D. ±1% of full-scale range. Analysis Time 5 to 6 minutes at a gas rate of 500 mL/min. Carrier Gas 99.9% O₂ at 500 mL/min. Ambient temperature requirements 5° to 35° C</p> <p>(Total Nitrogen) Unit To run ASTM D 8083 "Test Method for Total Nitrogen, and Total Kjeldahl Nitrogen (TKN) by Calculation, in Water by High-Temperature Catalytic Combustion and</p>			
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			<p>Chemiluminescence Detection”. This method measures TN from 0.2 – 500 mg/L with concentrations up to 10,000 mg/L possible by sample dilution. The method detection limit should be ≤ 0.05 mg/L TN. The method includes data demonstrating simultaneous TOC analysis.</p> <p>Online UPS</p> <p>With all necessary accessories including: High-salt sample combustion tube kit; B-type halogen scrubber; Kit for small sample volumes; Carrier gas purification kit; Gas sample injection kit; POC measurement kit; Nitrogen carrier gas kit; Suspended sample kit</p> <p>Core i5 11th Generation, 8 GB DDR IV, 1TB hard disk, DVD RW, LCD 19”, Keyboard and Mouse), 4GB 128bit GDDR6 Video Graphics Cards, Printer (HP LaserJet pro duplex)</p>			
32	WQL – 37	Ultrafiltration and nano-filtration units Package unit / Computer Controlled Continuous and Batch Filtration Unit	<p>Bench-top Unit</p> <p>Anodized aluminum frame and panels made of painted steel.</p> <p>Main metallic elements made of stainless steel.</p> <p>Diagram in the front panel with distribution of the elements similar to the real one.</p> <p>This filtration unit demonstrates the principles of continuous and batch filtration.</p> <p>Double tank (capacity: 9 l), made of methacrylate.</p> <p>Level switch in the tank.</p> <p>Stirrer, computer controlled.</p> <p>Centrifugal pump max. 4 bar, computer controlled.</p> <p>Heating element, computer controlled, power: 500 W.</p> <p>Vertical plates filter, composed of 4 nylon plates of 5 microns diameter, allowing us to filter the CaCO₃ suspension of known concentration.</p> <p>Cartridge filter will filter and “clean” a water sample with small pieces of paper.</p> <p>Two temperature sensors, “J” type.</p> <p>Two pressure sensors, range: 0 – 6 bar.</p> <p>Flow sensor, range: 0.1 – 25 l/min.</p> <p>Water and calcium carbonate are the recommended working materials for reasons of safety and ease to use.</p> <p>The complete unit includes as well: Advanced Real-Time SCADA and PID Control. Open Control + Multicontrol + Real-Time Control. Specialized Control Software based on</p>	1		

			<p>LabVIEW.</p> <p>Data Acquisition board (250 KS/s, kilo samples per second).</p> <p>Capable of doing applied research and real industrial simulation</p> <p>Control Interface Box</p> <p>The Control Interface Box as part of the SCADA system.</p> <p>Control interface box with process diagram in the front panel.</p> <p>The unit control elements are permanently computer controlled.</p> <p>Simultaneous visualization in the computer of all parameters involved in the process.</p> <p>Calibration of all sensors involved in the process.</p> <p>Real time curves representation about system responses.</p> <p>All the actuators' values can be changed at any time from the keyboard allowing the analysis about curves and responses of the whole process.</p> <p>Shield and filtered signals to avoid external interferences.</p> <p>Real time PID control with flexibility of modifications from the computer keyboard of the PID parameters, at any moment during the process.</p> <p>Real time PID control for parameters involved in the process simultaneously.</p> <p>Proportional control, integral control and derivative control, based on the real PID mathematical formula, by changing the values, at any time, of the three control constants (proportional, integral and derivative constants).</p> <p>Open control allowing modifications, at any moment and in real time, of parameters involved in the process simultaneously.</p> <p>Data Acquisition Board</p> <p>The Data Acquisition board as part of the SCADA system.</p> <p>PCI Express Data acquisition board to be placed in a computer slot.</p> <p>Analog input: Channels= 16 single-ended or 8 differential. Resolution=16 bits, 1 in 65536. Sampling rate up to: 250 KS/s (kilo samples per second).</p> <p>Analog output: Channels=2. Resolution=16 bits, 1 in 65536.</p> <p>Digital Input/Output: Channels=24 inputs/outputs.</p> <p>4 TFUC/CCSOF. PID Computer Control +Data Acquisition+Data Management Software:</p> <p>Sampling velocity up to 250 KS/s (kilo samples per second).</p> <p>Calibration system for the sensors involved in the process.</p> <p>Manuals</p>			
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			<p>This unit must be supplied with all relevant manuals: Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals.</p> <p>Desktop Computer Core i5 11th Generation, 8 GB DDR IV, 1TB hard disk, DVD RW, LCD 19", Keyboard and Mouse), 4GB 128bit GDDR6 Video Graphics Cards, Printer (HP LaserJet pro duplex)</p>			
33	WQL – 38	Ultracentrifuge (refrigerated)	Refrigerated centrifuge that can handle sample tubes (multiple rotor) with a capacity of 2ml, 15ml and 50ml. Max rotation speed 14000 RPM, Temperature: – 20 or +20 °C	1		
34	WQL – 39	UV-visible spectrophotometer	<p>Double beam UV/Vis spectrophotometer covering 190-1100nm</p> <p>Compact design, Colour Touch screen display with easy-to-use software built in USB connectivity for method and results storage plus connection to a PC</p> <p>Photometric system: Monitor double beam optics</p> <p>Monochromator: Weight Uses an aberration correcting concave holographic grating</p> <p>Wavelength range: 190.0 to 1100.0 nm</p> <p>Spectral bandwidth: 5 nm</p> <p>Detector: Silicon photodiode</p> <p>Light source: 20 W halogen lamp, Deuterium lamp</p> <p>Output device: USB memory</p> <p>PC control: UV Probe control</p> <p>Nano Stick microliter cuvette: Designed for micro volume measurements; sample volume required should be atleast 2 µl with standard and buffer</p> <p>Environmental requirements: Temperature: 15 °C to 35 °C Humidity: 30 % to 80 % Humidity of 70 % or less at temperatures of 30 °C or higher</p> <p>Dimensions: W416 × D379 × H274 mm</p> <p>Software mode: Photometric mode, Spectrum mode, Quantitation mode, Kinetics mode, Time scan mode, Multi-component quantitation mode, Biomethod mode</p> <p>Parameters: Residual Chlorine (Free), Free Cyanide, Total Cyanide, COD, Color, Chromium (Hexavalent), Total Chromium, Copper, Fluoride (Free), Iron, Iron (Low Range), Formaldehyde, Hydrogen Peroxide, Manganese, Ammonium, Ammonium-Nitrogen, Nickel, Nitrite, Nitrite-Nitrogen, Nitrate-Nitrogen, Nitrate, Lead, Phenol, Phosphate, Phosphate-Phosphorus, Sulfide (Hydrogen Sulfide), Total Hardness,</p>	1		

			<p>Turbidity, Zinc</p> <p>Accessories: All necessary including Multi-Sample Measurements, Water Analysis Program Software</p> <p>Core i5 11th Generation, 8 GB DDR IV, 1TB hard disk, DVD RW, LCD 19", Keyboard and Mouse), 4GB 128bit GDDR6 Video Graphics Cards, Printer (HP LaserJet pro duplex)</p>			
35	WQL – 40	Vacuum Filters and Centrifuges (GP-8) with a rotor	<p>Designed to work with standard 50mL centrifuge tubes, which eliminates sample transfer.</p> <ul style="list-style-type: none"> • Filtration unit includes filter, 50mL graduated plastic centrifuge tubes, centrifuge tube cap and stand • Features a 0.22µm Polyethersulfone Membrane Filter • Fast flow and low protein binding for sterilization of biological solutions, buffers, microbiology media and culture media. • Filtration area, cm squared: 7; process volume, mL: 50; hold-up volume, µL: 600 • Pack of 25 	1		
36	WQL – 42	Water Purification (deionizers)	<p>Water purification system, a compact solution for low-volume pure water laboratory applications or production of up to 15 L purified water per day.</p> <p>Daily Product Water Usage 40 L/Day</p> <p>Integrated 6 liter storage tank</p> <p>Feed Water Nature Potable Tap Water</p> <p>Make-up flow rate 3 L/h</p> <p>Flow Rate 3 L/h</p> <p>Product Water Resistivity at 25 °C > 10 MΩ·cm</p> <p>Product Water TOC < 5 ppb</p> <p>Product Water Microorganisms < 0.1 CFU/mL</p> <p>Complete with all accessories and required consumables</p>	1		
37	WQL – 43	Water Quality Analyzer (Water Logger)	<p>Global Data Logger</p> <p>Memory: Non-volatile flash memory</p> <p>Power: Voltage: 7.2 VDC Min. to 24.0 VDC Absolute Max</p> <p>Standby Current: 70uA Typical</p> <p>Logging Current: 5mA Typical + sensor current</p> <p>Analog Sensor Inputs: 4-20mA (0-5VDC as factory option)</p> <p>Resolution: 12-Bit, 4096 Steps</p> <p>Channels: 7 Input channels + battery voltage monitor</p> <p>Sensor Warm-up Time: Programmable, 0-60 Sec</p> <p>Digital Inputs: 2 Independent pulse counters</p> <p>Maximum Input Voltage: 24VDC</p> <p>Maximum Frequency: 100Hz</p> <p>Minimum Pulse Width: 2mS</p>	1		

			<p>Maximum Count: 65,535 (16-Bit) Sample Now Input: Sample-on-Demand input, software enabled Maximum Input Voltage: 24VDC Minimum Pulse Width: 2mS Sample Modes: Fixed Interval Programmable from 1 Sec. to >1 Year High Speed 10 Samples per second Logarithmic Sample Rate (Approximation) Exception (Log only on deviation from previous reading) Storage Capacity: 40,879 Recordings for all inputs plus time stamp Data Overwrite: Select memory wrap or unwrap (unwrap will stop logging data once memory is full) Communication Ports: RS-232 DB9 or USB Type B Selectable Baud Rates: 9600, 19200, 28800, 38400, 57600, 115200 Clock: Synchronizes to the time and date of user's computer Operating Temperature: Industrial, -40 to +185°F (-40 to +85°C) (Battery may not apply) Enclosure: Expanded UV protected PVC (5x2x3 inch (12.7x5x7.6 cm)) Weight: 1.5 lbs (680 g) (with weather-proof enclosure) Data Logger Software Compatible with Microsoft's Windows Vista, and 7 Windows and Excel are trademarks of the Microsoft Corporation Weather-Proof Enclosure Expanded UV protected PVC (9x7.5x4.5 inch (23x19x11 cm)) Battery: 12 Volt, 2.2 A/hr., Rechargeable (Gell Cell)</p> <p>Temperature Sensor Range: -58 to +122°F (-50 to +50°C) Accuracy: ±0.2°F or ±0.1°C Maximum Pressure (Open Water): 200 psi Operating Voltage: 10-36 VDC Warm Up Time: 5 seconds minimum Operating Temperature: -58 to +212°F (-50 to +100°C) Size of Probe: 4-1/2 inch L x 3/4 inch Diameter (11.4 cm x 1.9 cm Dia.)</p> <p>pH Sensor Range: 0-14 pH Accuracy: 2% of full scale Maximum Pressure: 40 psi Operating Voltage: 10-30 VDC Current Draw: 5.5 mA plus sensor output Warm Up Time: 3 seconds minimum Operating Temperature: 23 to 131°F (-5 to +55°C) Size of Probe: 10 inch L x 1-1/4 inch Diameter (25.4 cm L x 3.2 cm Dia.)</p>			
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			<p>Conductivity Sensor Range: 0-5,000, 0-10,000, 0-20,000 Micro Siemens (micro mhos) per cm Accuracy: 1% of full scale Maximum Pressure: 50 psi Operating Voltage: 12VDC ($\pm 5\%$) Current Draw: 0.8 mA plus Sensor output Warm Up Time: 3 seconds minimum Operating Temperature: -40 to +131°F (-40 to +55°C) Size of Probe: 12 inch L x 1 inch Diameter (30.5 cm L x 2.54 cm Dia.) Temperature Compensation: 2% per °C Electrodes: 316 Stainless Steel</p> <p>DO Sensor Range: 0-100% Saturation, 0-8 ppm, temperature compensated to 25°C Accuracy: $\pm 0.5\%$ of full scale Maximum Pressure: 40 psi Operating Voltage: 10-36 VDC Current Draw: 15.5 mA plus sensor output Warm Up Time: 10 seconds minimum Operating Temperature: -40 to +131°F (-40 to +55°C) Membrane: 0.001 FEP Teflon (standard) Combined Error: 2% FS</p> <p>ORP Sensor Output: 4-20 mA Range: -500 to +500mV Accuracy: 2% of full scale Maximum Pressure: 40 psi Operating Voltage: 10-36VDC Current Draw: 0.2 mA plus sensor output Warm Up Time: 3 seconds minimum Operating Temperature: -40 to +131°F (-40 to +55°C) Fully encapsulated electronics 4-20 mA output Marine grade cable with strain relief Stainless steel housing</p> <p>Water Level Sensor Sensor Element: Silicone Diaphragm, Wet/Wet Transducer Pressure Range: 0-3, 0-15, 0-30, 0-60, 0-120, 0-250, 0-500 ft Linearity and Hysteresis: $\pm 0.1\%$ FS Accuracy: $\pm 0.1\%$ of full scale at constant temperature, $\pm 0.2\%$ over 35°F to 70°F (1.37° to 21.1°C) range Overpressure: Not to exceed 2 x full scale range Resolution: Infinitesimal (Analog) Outputs: 4-20 mA or 0.5 to 2.5 VDC across 125 ohms Supply Voltage: 8 to 36 VDC Current Draw: Same as sensor output Warm Up Time: 3 seconds recommended</p>			
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			<p>Operating Temperature: -40° to +185°F (-40° to +85°C) Compensation: Uses dynamic temperature compensation 30 to 70°F (-1.1 to 21.1°C). Automatic barometric pressure compensation Weight: 1/2 lb (227 g) <u>Housing</u> Material: 304L Stainless Steel, SS microscreen (hundreds of holes to prevent fouling), electronics are fully encapsulated in marine grade epoxy, guaranteed not to leak Size: up to 13/16 inch diameter x 5 1/2 in long (2 cm dia. x 14 cm long)(small enough for a 1 inch (2.54 cm) well). Titanium option has 1 inch (2.54 cm) diameter. <u>Vented Cable</u> Conductors: 4 each 22 AWG Material: Marine grade polyether jacket, polyethylene vent tube, full foil shield Outer Diameter: 0.306 inch (0.78 cm) Temperature Range: -22° to +185°F (-30° to +85°C) Weight: 0.7 oz/ft (~65g/m) Length: Standard 25 ft (7.62 m) (up to 500 ft (152.4 m) from factory)</p> <p>Laptop that can work in field conditions Processor Options: 8th Gen Intel® Core™ i7 quad-core processors + vPro™ Operating System: Microsoft® Windows 10 Pro 64 bit Memory Options: 32GB 2400MHz DDR4 Non-ECC Graphics: Integrated Intel HD 620 and UHD 620 Graphic options AMD Radeon™ 540 and RX540 Graphic options Display: 14" FHD WVA (1920 x 1080) 16:9 Anti-Glare display; Direct-View outdoor readable display with glove capable resistive touchscreen Storage Options: <u>Primary Drive Option:</u> 126GB, 256GB, 512GB, 1TB, 2TB PCIe NVMe Solid State Drive Class 40 or 256GB, 512GB, 1TB PCIe NVMe Self Encrypting Drive Class 40 <u>Secondary and Third Drive Options:</u> 256GB, or 512GB SATA Class 20 Solid State Drive Optical Drive Options: Optional 8X DVD-ROM, 8X DVD+/-RW or BlueRay RW (All Optical drives replace the 3rd storage bay option)</p>			
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38	WQL – 44	Water Treatment Studies Bench	<p>Raw water storage tank, capacity: 250 l.</p> <p>Treated water storage tank, capacity: 250 l.</p> <p>The raw water tank includes a line to introduce air optionally with an external compressed air supply (not included). The air passes through a computer controlled electrovalve and a pressure regulator to provide constant pressure to the tank. Five level switches.</p> <p>Water treatment unit:</p> <p>Two transparent filters:</p> <p>Diameter: 200 mm, each one.</p> <p>Height: 650 mm, each one.</p> <p>The filters have connections that allows samples to be taken. The upper filter contains gravel and the lower filter contains</p>	1		

			<p>sand. They include two differential pressure sensors, range: 0 – 2 bar. Two transparent adsorbers:</p> <p>Diameter: 200 mm, each one. Height: 650 mm, each one.</p> <p>The filters have connections that allows samples to be taken. The upper adsorber contains aluminum oxide and the lower adsorber contains activated carbon.</p> <p>Two exchangers:</p> <p>Diameter: 250 mm, each one.</p> <p>Height: 400 mm, each one.</p> <p>The filters have connections that allows samples to be taken.</p> <p>The lower exchanger contains a mixed bed with cations and anions, and the upper exchanger contains cations.</p> <p>Pressure sensor (range: 0 – 6 bar) to measure the plant pressure.</p> <p>Inductive magnetic flow sensor (range: 0.21 l/min – 50 l/min) of the raw water input.</p> <p>“J type” temperature sensor to measure the temperature of the incoming water.</p> <p>Three “J type” temperature sensors to measure the temperature of the raw water between each purification stage.</p> <p>Three conductivity sensors (range: 0 – 20 mS/cm)) to measure the raw water conductivity between each purification stage.</p> <p>Flow control valve.</p> <p>Sampling valves at each purification stage.</p> <p>The unit control elements are permanently computer controlled, without necessity of changes or connections during the whole process test procedure.</p> <p>Simultaneous visualization in the computer of all parameters involved in the process.</p> <p>Calibration of all sensors involved in the process</p> <p>The Data Acquisition board is part of the SCADA system.</p> <p>PCI Express Data acquisition board to be placed in a computer slot. Bus PCI Express.</p> <p>Analog input:</p> <p>Number of channels= 16 single-ended or 8 differential. Resolution=16 bits, 1 in 65536.</p> <p>Sampling rate up to: 250 KS/s (kilo samples per second).</p> <p>Input range (V)=± 10 V. Data transfers=DMA, interrupts, programmed I/O. DMA channels=6.</p> <p>Analog output:</p> <p>Number of channels=2. Resolution=16 bits, 1 in 65536.</p> <p>Maximum output rate up to: 900 KS/s.</p> <p>Output range (V)=± 10 V. Data transfers=DMA, interrupts, programmed I/O.</p>			
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			<p>Digital Input/Output: Number of channels=24 inputs/outputs. D0 or DI Sample Clock frequency: 0 to 100 MHz.</p> <p>Timing: Number of Counter/timers=4. Resolution: Counter/timers: 32 bits. The Data Acquisition board model may change at any moment, providing the same or better features than those required for the unit</p> <p>Core i5 11th Generation, 8 GB DDR IV, 1TB hard disk, DVD RW, LCD 19", Keyboard and Mouse), 4GB 128bit GDDR6 Video Graphics Cards, Printer (HP LaserJet pro duplex)</p>			
			TOTAL			
			ADD: GST/SRB (Whichever is applicable)			
			Total Bid Amount including all taxes & duties etc.			

 Signature & Stamp of Bidder

Integrity Pact

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC. PAYABLE BY THE SUPPLIERS/CONTRACTORS/CONSULTANTS.

Contract Number: _____

Dated: _____

Contract Value: _____

Contract Title: _____

[Name of Supplier/Contractor/Consultant] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Sindh (GoS) or any administrative subdivision or agency thereof or any other entity owned or controlled by it (GoS) through any corrupt business practice.

Without limiting the generality of the foregoing, _____
[Name of Supplier/Contractor/Consultant] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit, in whatsoever form, from Procuring Agency (PA), except that which has been expressly declared pursuant hereto.

[Name of Supplier/Contractor/Consultant] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with PA and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[Name of Supplier/Contractor/Consultant] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other right and remedies available to PA under any law, contract or other instrument, be voidable at the option of PA.

Notwithstanding any rights and remedies exercised by PA in this regard, _____
[Name of Supplier/Contractor/Consultant] agrees to indemnify PA for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to PA in an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by _____
[Name of Supplier/Contractor/Consultant] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit, in whatsoever form, from PA.

[Procuring Agency]

[Supplier /Contractor/Consultant]

NED UNIVERSITY OF ENGINEERING & TECHNOLOGY

No. DR(Estab)/(1003)/5019

Dated: 23-10-2020

OFFICE ORDER

In continuation of this Office Order No. DR(Estab)/(1003)/3295 dated 06-08-2020, the University Administration has constituted the Procurement Committee for goods, comprising of the following for the project "Establishment of 21st Century Water Institute at NED University of Engineering & Technology, Karachi:

- | | | |
|----|---|-------------------|
| 1. | Prof. Dr. Rizwan Ul Haque Farooqui
Chairperson,
Dept. of Civil Engineering | Convener |
| 2. | Mr. Javaid Riaz
Director (Projects)
HEJ Institute of Chemistry
University of Karachi
(HEC Nominee) | Member |
| 3. | Dr. Atif Mustafa
Chairperson,
Dept. of Environmental Engineering | Member |
| 4. | Mr. Muhammad Mabroor Khan
Administrative Officer
Centre of Excellence in Marine Biology
University of Karachi | Member |
| 5. | Mr. Fawad ul Hassan Kamran
Assistant Director Procurement-II | Member/ Secretary |


REGISTRAR

To:

Convener and all Members of Committee

Electronic copy for information to:

1. P A to Pro Vice Chancellor
2. Director Finance
3. Director, Planning & Development
4. Ag. Resident Auditor

NED UNIVERSITY OF ENGINEERING & TECHNOLOGY

No. DR (Estab)/(1003)/5730

Dated: 27/05/2016

OFFICE ORDER

In supersession of this office order No. DR (Estab)/(1003)/11418 dated 02-11-2015, the University Administration has constituted the Complaint Redressal Standing Committee comprising of the following officers to address complaints regarding all procurement issues in the University in pursuance of Clause 31(1) of the SPPRA rules:

- | | | |
|----|---|----------|
| 1. | Prof. Dr. Saad Ahmed Qazi
Dean (ECE) | Convener |
| 2. | Independent Professional from the relevant field | Member |
| 3. | Nominee of Accountant General Sindh | Member |


Ag. REGISTRAR 27/5/2016

To:

The Convener & all members

Copy for information to:

- 1 Dean (ECE)
- 2 Director Planning & Projects
- 3 Director Finance
- 4 Director, Procurement Cell
- 5 Ag. Resident Auditor



**NED UNIVERSITY OF ENGINEERING & TECHNOLOGY
PROCUREMENT CELL**

Tele # 99261261- 2291, (Ext. 2471) Fax # 99261255,

E-mail: dp@neduet.edu.pk



Director Procurement

"Say NO to Corruption"

No. DP/NED/142085/7051/ 3911
Dated: 25-05-2021

The Director Information Advertisement
Government of Sindh,
Information Department
Directorate of Advertisement
Karachi.

R&I Incharge
Advertisement Section
Information Department
Govt. of Sindh, Karachi
26/05/2021

SUBJECT: PUBLICATION OF NOTICE INVITING TENDER

Enclosed kindly find herewith the Notice Inviting Tender (NIT) for publication in three newspapers for job mentioned below:

Notice Inviting Tender	Procurement of Laboratory Equipment for Water Institute at NEDUET. Tender No. PC(WI) NED/Equip/W.Q Lab/03/7051/2021
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Kindly ensure the publication of the aforementioned NIT as under:

Name of Newspapers	Ordinary Page	Date of Publication
Daily "Dawn" - English Daily "Jang" - Urdu Daily "Awami Awaz" - Sindhi	Black & White	On or before 01-06-2021

The aforesaid NIT please be published on or before 01-06-2021. The bill along-with tear sheet of newspapers may be sent to Director Finance of this University for payment.

Copy to DF

Director Procurement
25/05/2021

9/c
Director Procurement
Procurement Cell
NED University of Engg. & Tech.
Karachi.



NED UNIVERSITY OF ENGINEERING & TECHNOLOGY

PROCUREMENT CELL



Director Procurement

Phone # 99261261-68 (Ext. 2291) Fax # 99261255, E-mail: dp@neduet.edu.pk

NO: PC/NED/142085/7051/3911

DATED: 25.05.2021

NOTICE INVITING TENDER

NEDUET invites sealed bids based on "Single Stage — One Envelope" from the manufacturers / authorized dealers / distributors / suppliers registered with Income Tax and GST Departments for the following:

S. No.	Tender		Tender Schedule — Date and Time				Tender Fee
	Number	Work	Issue / Sale		Submission	Opening	
			From	To			
1.	PC(WI)/NED/Equip/ W.Q. Lab/03/7051/2021	Procurement of Laboratory Equipment for Water Institute at NEDUET	08.06.2021	22.06.2021	23.06.2021 10:00 A.M.	23.06.2021 10:30 AM	3000/-
Bid security @2% of the total bid cost in shape of PO / Bank Guarantee / Demand Draft in favour of the Director Finance.							
Tender documents can be purchased from ADP-II Office against PO in favour of Director Finance & shall be opened as per above schedule in same office.							

Eligibility Criteria

- The bidder must have at least 3 years of experience in the relevant field.
- Details of turnover (including in terms of rupees) of at least last three years that average turnover of last three years should not be less than Rs. 200 million per year as per online annual returns submitted to FBR.
- Registration with FBR / SRB (whichever is applicable) and must have valid Professional Tax Certificate.
- Affidavit on non-judicial stamp paper confirming that the firm has not been blacklisted by any Government, Semi Government or Autonomous Bodies

Tender fee and bid security in shape of Pay Order should be in favour of Director Finance. Bidding documents can be obtained and submitted in the office of ADP-II as per above schedule. Bidders are requested to give their best and final price as "No Negotiation" is permitted. Bidding documents containing detailed terms and conditions are available at website www.neduet.edu.pk and www.ppms.pprasindh.gov.pk.

INF-KRY No. 1992/2021

Say No to Corruption

ہم دہشتگردی کے خلاف متحد ہیں

Director Procurement



NED یونیورسٹی آف انجینئرنگ اینڈ ٹیکنالوجی

پروکیورمنٹ سیل



Phone # 99261261-68 (Ext:2291)

Fax # 99261255, Email: dp@neduet.edu.pk

DIRECTOR PROCUREMENT

"SAY NO to Corruption"

مورخہ: 25-05-2021

نمبر: PC/NED/142085/7051/3911

ٹوٹس طلبی ٹینڈر

NEDUET کو مندرجہ ذیل کیلئے اگم ٹیکس اور GST ڈپارٹمنٹس کے پاس رجسٹرڈ میٹریکلررز/مہازڈیلرز/ڈسٹری بیوٹرز/سپلائرز سے منسلک ایجنٹوں کی ویب سائٹ پر جی ایم بی آرڈر پیشکشیں مطلوب ہیں۔

نمبر شمار	ٹینڈر		ٹینڈر شیڈول - تاریخ اور وقت				ٹینڈر فیس
	نمبر	کام	اجرا/ فروخت		جمع کرایہ	سکلتا	
			از	تا			
-1	PC(WT)/NED/ Equip/W.Q.Lab/03/7051/2021	حصول ایٹ لیب/پارٹی کیلک پوسٹ برائے وارڈ آپنی ٹیٹ بمقام NEDUET	08-06-2021	22-06-2021	23-06-2021 صبح 10:00 بجے	23-06-2021 صبح 10:30 بجے	3000/- روپے

پیسکیورٹی مجبوری پڑا گیسٹ کی 2% کی شرح سے پیکل PO / پیکل گارنٹی / ڈیسٹری بیوٹرز/سپلائرز/ڈسٹری بیوٹرز کیلئے اس

ٹینڈر دستاویزات ADP-II آپس سے PO کیلئے ڈائریکٹ کلائنٹس کے عوض خریدی جا سکتی ہیں اور اسی دفتر میں مندرجہ بالا شیڈول کے مطابق کوالٹی جائزگی۔

معیار اہلیت: (i) برقی وندہ/تھقلہ شعبہ میں کم از کم تین سالہ تجربہ کار اہل ہو۔ (ii) کم از کم گزشتہ تین سالوں کے کارنٹریں کی تصدیقات (شامل برآمدات/ریپورٹس) کے گزشتہ تین سالوں کا وہ طاقن اور 200 ملین روپے سالانہ سے کم نہ ہو برطانیہ آن لائن سالانہ ریفرنڈر FBR کو پیش کرانے گئے۔ (iii) FBR/SRB سے رجسٹرڈ (جو بھی قبل اطلاق ہے) اور کارنامہ پر پیشکش ٹیکس بریکٹ۔ (iv) 50 ملین روپے سے بھی بڑے طاقن سالانہ میں تصدیق کی گئی ہو کارنامہ کی سرکاری/میں سرکاری یا غیر سرکاری ادارہ سے ایک سالہ فیس رہی۔ ٹینڈر فیس بڑھ سکتی ہے یا نہیں سہارا رکھنے ڈائریکٹ کلائنٹس ہونے یا نہیں۔ بڑھ سکتا ہے دستاویزات ڈائریکٹ کلائنٹس کے مطابق حاصل کی جا سکتی ہیں اور ADP-II میں پیش کرانے کی ہوں گی۔ برقی وندہ/تھقلہ شعبہ کے کارنامہ کی سرکاری/میں سرکاری یا غیر سرکاری ادارہ سے ایک سالہ فیس بڑھ سکتی ہے یا نہیں۔ سہارا رکھنے ڈائریکٹ کلائنٹس ہونے یا نہیں۔ بڑھ سکتا ہے دستاویزات ڈائریکٹ کلائنٹس کے مطابق حاصل کی جا سکتی ہیں اور ADP-II میں پیش کرانے کی ہوں گی۔ برقی وندہ/تھقلہ شعبہ کے کارنامہ کی سرکاری/میں سرکاری یا غیر سرکاری ادارہ سے ایک سالہ فیس بڑھ سکتی ہے یا نہیں۔ سہارا رکھنے ڈائریکٹ کلائنٹس ہونے یا نہیں۔ بڑھ سکتا ہے دستاویزات ڈائریکٹ کلائنٹس کے مطابق حاصل کی جا سکتی ہیں اور ADP-II میں پیش کرانے کی ہوں گی۔

(INF/KRY-1992/21)

ڈائریکٹر پروکیورمنٹ